

# Croplife

A BUSINESSPAPER FOR THE FARM CHEMICAL INDUSTRY

MEMBER, BUSINESS PUBLICATIONS AUDIT

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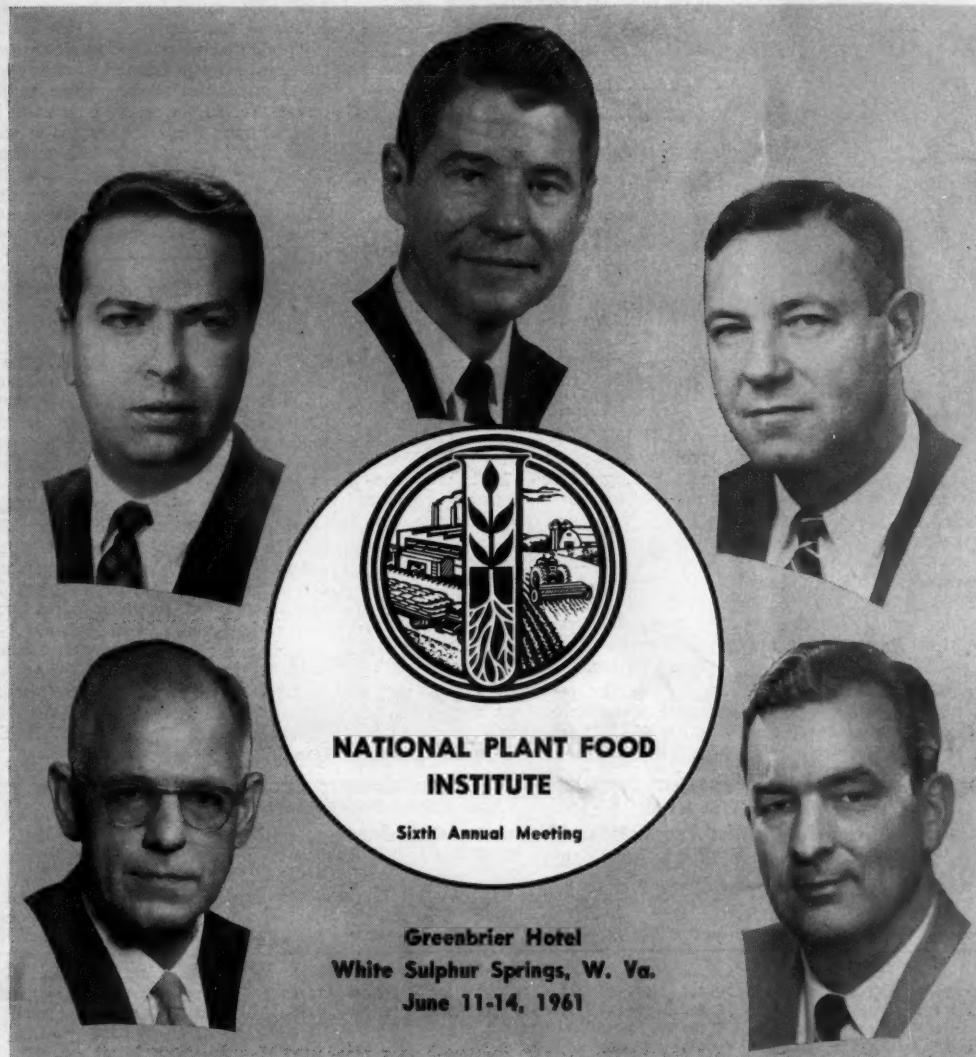


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**NPFI SPEAKERS**—Appearing on the program of the National Plant Food Institute's sixth annual convention at White Sulphur Springs, W. Va., are the above. At top is Orville L. Freeman, Secretary of Agriculture. Reading clockwise, the others are Henry L. Ahlgren, associate extension director, University of Wisconsin, Madison; J. E. Streetman, vice president and director of marketing, Ralston Purina Co., St. Louis, Mo.; Willard M. Fifield, provost for agriculture, University of Florida, Gainesville; and Dr. Pierre Andre Rinfret, vice president and director of economics division, Lionel D. Edie & Co., Inc., New York.

## Reply to Questionnaire . . .

## Fertilizer Industry Leaders Talk Shop on Current Status and Future Trends in Trade

**T**HAT THE 1961 fertilizer season may go down in industry history as a significant year of change is indicated by answers to a Croplife survey sent out to industry people in all parts of the country, and also to state fertilizer control officials representing a broad area of the nation. The respondents reported for the most part, that business in 1961 exceeded that of the previous year, or was at least "about the same" as 1960's.

Price competition was mentioned as an important factor in the current year's selling; federal farm legislation was pointed out as another, and the increasing numbers of fertilizer bulk blenders as well as a changing pattern in services to customers were also underlined as weighty influences on the year's business.

In its predictions for the 1961 fertilizer year,

the U.S. Department of Commerce said that the higher level of fertilizer consumption started in 1960, was expected to continue this year, enabling the industry to at least equal, if not exceed, last year's figures. How nearly did this prediction come true in the light of comments offered by men in the industry at the height of the current season?

In most cases, the government's projections were quite accurate. Its statement that "trends toward higher analysis products, greater use of the individual component materials, and expansion of bulk blending, granulation, and liquid fertilizers are expected to continue . . ." is reiterated by many of the industry respondents.

Higher analysis mixtures are definitely increasing, with many manufacturers describing

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## News Briefs . . . ➤

### Complete Stories Inside

**NPFI CONVENTION** at Greenbrier Hotel presents program of economics, salesmanship ..... page 2

● **\$4 MILLION AMMONIUM Phosphate** plant announced by Minnesota cooperative. Plant will produce 100,000 tons annually, beginning in April, 1962 ..... page 16

● **POTASH DELIVERIES** rise 10% in first quarter of 1961, American Potash Institute reports. Total deliveries were 1,339,801 tons, API says ..... page 39

● **SIMPLON MOVES ENTIRE PLANT** to new location in Idaho. Equipment being shipped 250 miles by truck and rail to new site ..... page 14

● **CHEMAGRO CHEMICAL CORP.** wins friends and influences Kansas Citians after long discussions over alleged odors from pesticide plant ..... page 24

● **TEXAS FIRM PLANS** to manufacture mixed fertilizer product derived from coal. Will build new plant on 137-acre site near Glenrock, Wyo. ..... page 26

● **SOUTHWESTERN FERTILIZER CONFERENCE** to feature panel discussions and talks on "Fertilizer Needs and Consumption in the Southwest" ..... page 31

● **FOOD MACHINERY & CHEMICAL CORP.** changes its name to "FMC Corporation" as of July 1 this year. New designation said by officials to cover more accurately firm's activities ..... page 32

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# NPFI at Greenbrier for 6th Annual Convention

**WASHINGTON**—A program featuring talks on agricultural economics, selling to farmers, and the role of agricultural extension was scheduled for June 11-14 at the Greenbrier Hotel, White Sulphur Springs, W.Va., as the National Plant Food Institute conducted its sixth annual meeting. In addition to the speaking portions of the meeting, business sessions were scheduled in which new members were to be elected to the NPFI board.

Social events planned for the convention included a hospitality hour, courtesy of the nitrogen producers on Monday night, June 12, and a similar event on Tuesday evening, courtesy of the potash producers. In addition, the annual golf tournament was planned, as were events in tennis and other sports. The annual banquet was set for Tuesday night, with entertainment features.

Paul T. Truitt, NPFI president, was to be in charge of the general opening session on Monday morning, June 12, followed by a welcoming address by J. D. Stewart, Jr., Federal Chemical Co., Louisville, Ky., chairman of the NPFI board of directors.

The remainder of Monday's program was scheduled as follows: "The Anatomy of Growth," Dr. Pierre Andre Rinfré, vice president and director, economics division, Lionel D. Edie & Co., Inc., New York.

"Agriculture is Everybody's Business," Hon. Orville L. Freeman, Secretary of Agriculture, Washington, D.C.; and a program of awards for distinguished service to past presidents and past chairmen of the board of directors of NPFI, with Mr. Truitt officiating.

A business meeting of the NPFI membership was to complete the Monday morning program.

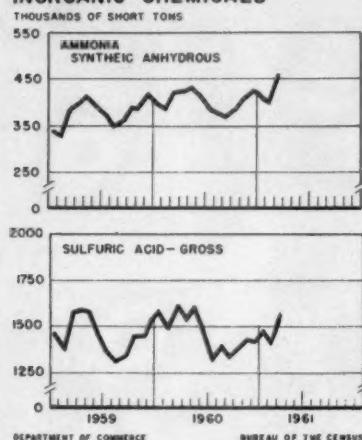


Paul T. Truitt  
NPFI President

Tuesday's advance program called for three addresses, with Mr. Truitt presiding. Talks and their titles: "Coming Developments in Farming" by W. M. Fifield, provost for agriculture, University of Florida; "Future Role of Agricultural Extension," Dr. Henry Ahlgren, associate director, Agricultural Extension Service, University of Wisconsin, Madison; and "Selling to Farmers," by J. E. Streetman, vice president and director of marketing, Ralston Purina Co., St. Louis, Mo.

An additional feature for Tuesday morning's program was the presentation of "Soil Management Awards for Editors," with Mr. Stewart presiding.

## PRODUCTION OF INORGANIC CHEMICALS



## Anhydrous Ammonia Output, Increases During March

**WASHINGTON**—The production level for a number of inorganic chemicals during March, 1961, was considerably higher than those reported for February and also for the corresponding month of last year, in most cases. Increases over February's figures were reported for 41 out of 44 chemicals included in the report compiled by the Bureau of the Census of the U.S. Department of Commerce.

Among the products listed in the report were anhydrous ammonia, of which 463,302 tons were produced in March this year as compared to 400,-

611 tons in February and 423,351 in March, 1960.

Ammonium nitrate figures were 287,166 tons produced in March this year; 269,351 tons in February, and 288,066 tons in March, 1960.

Ammonium sulfate: 78,097 tons in March, 1961; 68,305 tons in February, and 76,254 tons in March, 1960.

For nitrogen solutions, the figures were 92,666 tons produced in March, 1961; 72,585 tons in February, and 76,714 tons in March, 1960.

Phosphoric acid was reported as follows: 205,591 tons in March, 1961; 179,939 tons in February, and 183,927 tons in March, 1960.

Sulfuric acid was produced as follows: 1,557,954 tons in March, 1961; 1,388,695 tons in February, and 1,619,055 tons in March, 1960.

The Department of Commerce says that statistics presented in the report cover quantities produced for further processing in the same plant, for intra-company transfer, and for sale. They provide an up-to-date measure of activity in the inorganic field, but do not necessarily indicate amounts entering the market, the department says.

## Dr. Ernest Csendes to Armour Chemical Post

**ATLANTA, GA.**—Dr. Ernest Csendes has been appointed research director of Armour Agricultural Chemical Co., according to an announcement by W. E. Shelburne, president of Armour Agricultural Chemical Co.

A research chemist with E. I. du Pont de Nemours & Co. since 1953, Dr. Csendes has had extensive experience in the chemistry of nitrogen, sulfur, phosphorus and organometallic compounds, as well as supervisory and administrative experience.

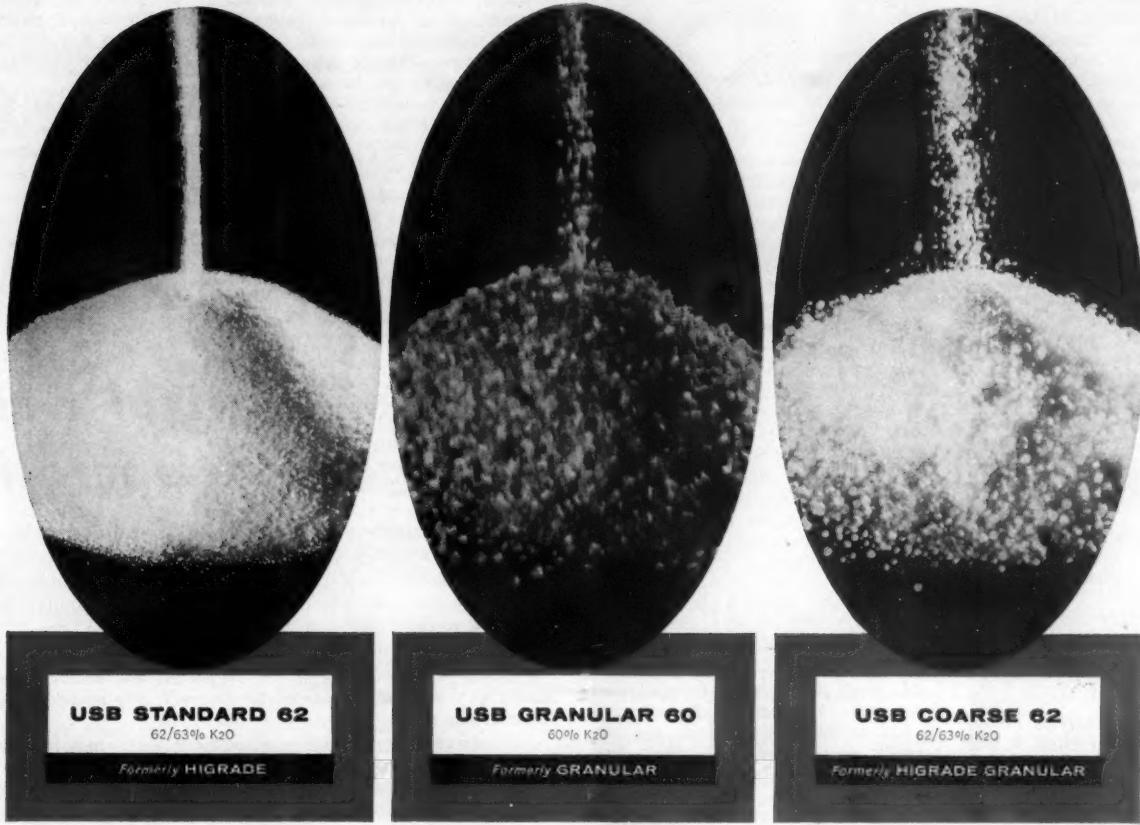
A native of Hungary, Dr. Csendes holds a B.A. degree from Protestant College in that country, and he received his B.S., M.S. and Ph.D. degrees from the University of Heidelberg.

TABLE 1—Superphosphate and Other Phosphatic Fertilizer Materials: Production, Shipments, Consumption, and Stocks, Classified by Type, in the United States, 1960  
(In Short Tons of 100% P<sub>2</sub>O<sub>5</sub>)

Product and item	Total	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
<b>Total:</b>													
Stocks on hand, beginning of month	355,621	367,261	358,947	318,259	225,458	223,161	305,049	366,440	371,582	359,302	371,694	424,254	
Production	2,655,652	238,398	238,719	251,176	242,607	254,914	214,766	171,028	189,745	183,651	217,795	234,930	217,923
Receipts at plants	21,188	1,010	1,872	1,595	2,958	3,331	1,345	778	1,361	2,004	2,264	1,389	1,281
Book adjustments (account of inventory)	+9,154	+286	-397	+299	+3,543	+1,406	+261	+1,791	-775	+400	+1,335	+1,259	-254
Shipments	1,927,875	161,424	185,582	223,186	239,266	183,946	106,553	92,644	148,664	146,790	155,457	131,051	153,312
Used in reporting plants	679,868	66,630	62,926	70,572	104,645	76,002	27,931	19,562	36,525	51,545	53,545	53,967	56,020
Stocks on hand, end of month	367,261	358,947	318,259	223,458	223,161	305,049	366,440	371,582	359,302	371,694	424,254	433,872	
<b>Normal and Enriched Superphosphate:</b>													
Stocks on hand, beginning of month	204,146	201,300	210,849	208,828	148,073	137,230	184,299	203,304	202,669	197,160	194,413	199,954	
Production	1,269,523	122,081	128,331	133,098	128,979	132,348	98,888	58,672	65,778	80,772	96,772	111,933	111,871
Receipts at plants	14,585	682	1,475	982	2,246	2,279	500	614	986	1,180	1,214	1,096	1,211
Book adjustments (account of inventory)	+6,288	+644	-2	+257	+1,199	+4332	+87	+1,675	-293	+168	+1,049	+1,326	-154
Shipments	671,061	64,288	62,013	69,701	95,107	74,912	30,113	24,985	34,743	40,429	53,000	58,931	62,839
Used in reporting plants	625,388	61,945	58,242	66,657	98,092	68,890	24,293	16,971	32,353	47,200	48,882	49,883	51,950
Stocks on hand, end of month	201,300	210,849	208,828	148,073	137,230	184,299	203,304	202,669	197,160	194,413	199,954	198,093	
<b>Concentrated Superphosphate:</b>													
Stocks on hand, beginning of month	123,098	129,240	108,755	75,688	54,417	63,221	93,852	126,084	129,546	127,246	137,527	172,997	
Production	985,636	83,490	78,898	81,794	80,327	86,815	85,111	80,741	89,946	68,884	87,197	88,382	74,051
Receipts at plants	6,545	328	387	583	674	1,052	845	164	375	824	950	293	70
Book adjustments (account of inventory)	+3,046	-310	-366	+78	+2,515	+1,244	-40	+48	-479	+232	+101	+117	-94
Shipments	898,747	73,723	95,987	113,724	100,099	75,042	52,868	46,933	83,835	68,997	74,346	50,270	62,723
Used in reporting plants	38,320	3,643	3,417	1,798	4,688	5,245	2,417	1,788	2,545	3,243	3,621	3,052	2,843
Stocks on hand, end of month	129,240	108,755	75,688	54,417	63,221	93,852	126,084	129,546	127,246	137,527	172,997	181,258	
<b>Ammonium Phosphate:</b>													
Stocks on hand, beginning of month	22,203	29,328	31,833	28,303	18,017	17,152	23,207	27,562	28,137	23,519	26,009	31,262	
Production	269,450	22,126	20,792	24,478	20,812	22,742	22,101	18,970	23,962	26,319	23,307	22,852	20,989
Receipts at plants	58	10	30	18	.....	.....	.....	.....	.....	.....	.....	.....	.....
Book adjustments (account of inventory)	+349	+1	+2	+126	-171	+234	+68	.....	.....	+185	-84	-12	.....
Shipments	250,383	14,589	17,927	27,452	30,499	22,840	15,572	14,199	22,991	30,428	20,414	17,014	16,458
Used in reporting plants	6,243	413	370	588	743	596	708	484	396	509	588	501	347
Stocks on hand, end of month	29,328	31,833	28,303	18,017	17,152	23,207	27,562	28,137	23,519	26,009	31,262	35,434	
<b>Other Phosphatic Fertilizers (including wet-base goods):</b>													
Stocks on hand, beginning of month	8,174	7,393	7,510	5,440	2,951	3,558	3,691	9,490	11,230	11,377	13,745	20,041	
Production	131,043	10,701	10,696	11,806	12,489	13,009	8,666	12,645	10,059	7,676	10,519	11,765	11,012
Receipts at plants	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Book adjustments (account of inventory)	-529	-49	-29	-38	-297	+1	-20	.....	-3	.....	.....	-100	+6
Shipments	107,684	8,824	9,655	12,309	13,561	11,152	8,000	6,527	7,095	6,936	7,697	4,836	11,092
Used in reporting plants	9,917	609	897	1,529	1,120	1,251	513	319	1,221	593	454	531	880
Stocks on hand, end of month	7,393	7,510	5,440	2,951	3,558	3,691	9,490	11,230	11,377	13,745	20,041	19,087	

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## FERTILIZER SHOP TALK

Continued from page 1

their highest grades as being 10-30-10; 16-48-0; 6-24-24; 10-20-20, and 10-10-10. Of significance, also, is the fact that several respondents said that these high analysis grades are among those most in demand.

The government's prediction that bulk blending would be on the increase was described by one person as being an "understatement" rather than an exaggeration. This respondent, who requested that his name not be used, said he knows of scores of new blending units presently either under construction, or definitely planned. Most of these units, he said, are located in the middle west.

Another fertilizer manufacturer said that in order to maintain efficient and effective distribution channels and to provide the service the customer has come to expect, a number of companies are erecting new warehouses or leasing existing ones in various places. This, it is pointed out, enables such fertilizer firms to give faster local service and to provide application service when requested.

The availability of ammonium phosphate grades such as 16-48-0, 11-48-0 and 18-48-0 is a boon to the development of more fertilizer bulk blenders, another midwestern respondent notes. He adds that smaller manufacturers in particular can make the most of such grades, and that the presence of such has spurred the rise of the blender.

Much of the blending activity is concentrated in the midwestern states, the survey indicates. One respondent located in the northeastern portion of the country says: "There has been little activity in this area with either the bulk blending truck or stationary bulk blending depots." He adds, however, that "the movement towards higher analysis mixed fertilizers will be faster than it has been in the past. We expect a sharp increase in bulk tonnage not only bulk-spread for the farmer, but also bulk to the farmer's truck."

### Blenders Good or Evil?

Not all respondents saw eye-to-eye in their comments regarding the rise of blenders. Whereas some heralded this development as a good omen for the industry in the way of increased

service and better distribution, others took a dim view of the trend. Some expressed the opinion that the difficulty on the part of state control officials to check on more than an occasional sample of blended goods leaves the door open for opportunists outside the industry to enter the field, make a "fast buck" and give the fertilizer industry itself a bad name. Such entrepreneurs, the industry observers predicted, could make a small fortune in a couple of seasons, then sell out to a successor who would have to suffer the ill-will of customers who by that time realized they had been "taken in."

One granular manufacturer stated, "We regard blenders as a threat to our industry. We believe they do an inferior job of mixing . . ."

State control officials, however, in commenting on the blending situation, appeared not to be sharply critical of the practice. Some indicated that they were "reluctant" to work with blenders at first, but state laws in some instances, have now been amended to cover these activities. Several state control officials sent along copies of their state laws providing for handling blended products, and nearly all the officials who replied, said that the number of blenders is on the increase in their areas.

W. L. Baker, supervisor of Fertilizer Control Services for Missouri, said: "Many factors have influenced this trend to increased usage of bulk blended fertilizers. The demand has come directly from the farmers and on that firm basis I believe bulk blending is here to stay, despite the many forces seeking to discourage the practice.

"1. With the operation of larger farm units, farmers are finding that custom services of all kinds are frequently more economical than further investment in specialized machinery and labor. This also permits them to extend their operations requiring personal attention.

"2. The price advantage of bulk fertilizers and of single and multi-nutrient materials over manufactured mixed fertilizers may more than pay for the cost of application.

"3. Increased soil testing with rec-

## Industry in Midst of

ommendations that cannot be exactly satisfied with standard mixed grades has undoubtedly encouraged bulk blending in some states.

"4. Availability of granular fertilizer materials of uniform particle size has made it possible for the blenders to do a better job of both blending and application.

"Bulk blending has, indeed, complicated the task of the control official. To the extent that bulk blending leads to custom-mixing of literally thousands of grades, it is completely incompatible with grade registration, which is a basic provision of most state fertilizer laws. The various states where bulk blending has made entry have attempted to resolve this problem in a variety of ways, from complete adherence to grade registration to the position that only the materials going into the bulk blends need be registered.

"In 1953 the Missouri Fertilizer Law was revised to do away with grade registration, thus allowing

us to register bulk blends on the same basis as other mixed fertilizers.

"Sampling bulk blended fertilizers is a problem, both because of the very limited time that these fertilizers are available to be sampled, and because it may require special equipment to secure a representative sample. In most cases the only practical place to secure samples is from the truck at the blending plant. We concentrate our sampling efforts at this point and, while we manage to sample about 2% of these mixtures, due to the usually short periods of operation, we find it very difficult to increase the intensity of inspection in this area."

W. B. Griem, Feed and Fertilizer Section of the Wisconsin State Department of Agriculture, says that his state does not have as many blending operations as have some of the surrounding states, but the ones presently in business are governed

### Fertilizer Introspection . . .

## Business Survival Based on Management Operations

**S**ELLING PLANT FOODS on the basis of lower prices seemingly without regard to the matter of business economics, remains one of the largest hindrances to the industry's progress in 1961, a number of respondents declared. One company which manufactures both granular mixed goods as well as blends, reports that its dry tonnage in 1961 has been 23% better than that of the previous year. But, a company executive observed, "price competition becomes increasingly severe. Never before, since the 1930's, have so many operators cut so many prices so severely, nor extended such crazy and unsound credit terms."

This company, located in a southern state, makes both bulk and bagged goods as it has been doing for nearly a half century.

Another respondent whose firm manufactures both liquid and granular goods, reports that in general, dry tonnage is about the same as last year's but liquid tonnage is off by around 10%. He blames the farm program somewhat for delay in getting this year's fertilizer tonnage on the move, but adds that "prices are all upset."

A penetrating look at the industry's practices concerning credit, manufacturing costs, and general business philosophy was made by one questionnaire respondent who says: "It seems to me that the most significant, and perhaps critical trend to the industry as far as agricultural chemicals are concerned, is the increasing practice of extending long-term credit to farmers.

"In fact, it just seems to me that those of us in the agricultural chemical business, as well as in all other businesses of supplying material, equipment, or what-have-you to the farmers, are principally at fault in that they have been so lenient in the matter of credit that in this part of the world, the farmers not only expect it, but even insist that the people with whom they do business carry them. And it appears that much of the farming west of the Mississippi is financed to a very appreciable extent by business.

"This situation is not confined merely to one part of the country, but is apparently widespread. One of the topics discussed by panel members attending the recent customer advisory meeting of International Minerals & Chemical Corp., was this matter of longer and longer extension of credit to their customers. These men came from all parts of the country, which underlines how widespread this practice is. In a sense, it could be said that we are in the financing business to as great or greater extent than we are of supplying chemicals for agricultural use.

"I'll agree, also, that the trend for

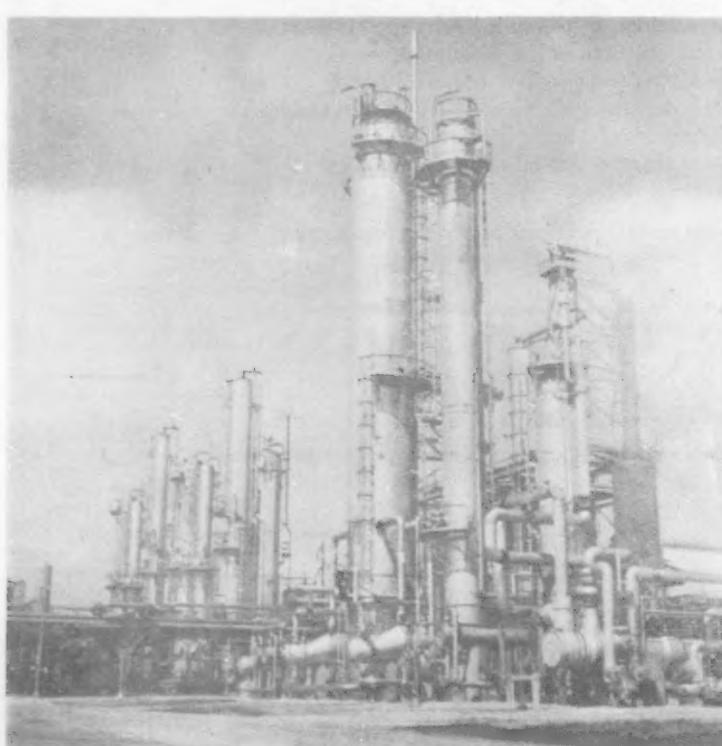
demanding increasing service on the part of our customers is moving upward. A few years ago, fully 50% of our fertilizers were hauled out on the trucks of customers who came to the plant and picked up the products. Today, fully 95% of our fertilizer, insecticide and herbicide materials are delivered to the growers' places.

"In the past year, there has been a definite trend towards bulk materials. We have the feeling that this practice will continue to increase.

"I am also going to touch on the age-old subject of shrinking margins. I don't believe there is any other business in the world that operates on as low a margin as does the fertilizer industry. It seems to me that most companies, instead of trying to train their salesmen to do a selling job by talking quality, technical assistance, and other services, merely let their salesmen take the line of least resistance and sell on a price basis only.

"With constantly increasing costs and narrowing margins, unless this trend of 'how cheap can I sell?' is stopped, there are going to be a lot of casualties in the business.

"I don't profess to be a prophet, but at the same time, I preach the philosophy of sound business practice and the necessity of a profit margin which will at least cover overhead, if the company is to continue to remain in business."



# Change, Leaders Say

by regulations which regard the blender as a custom operator.

"We check on the registration and the analysis of the raw materials used in the blending plants and also check to see that the invoicing of the blends is on an ingredient basis," he says. "We have no legal jurisdiction over the completed blends. In this respect our treatment of the operation is similar to the custom mixing of feeds by local feed dealers. No control is exercised over custom order feed mixtures, and the control is only on the ingredients used in such custom mixtures."

"Without a large field and laboratory staff it seems to me that it would be difficult to exercise the quality of control work on a level comparable to that which we can now do on branded mixtures."

The control division of the Department of Agriculture has not taken a position relative to the desirability of more intensive regulation of these operations. We do have a section in our law which permits us to do a limited amount of work on customer submitted samples of bulk fertilizers. The consumer does have some protection in this way."

A comprehensive look at the blending situation is reported by R. E. Bergman, director, Minnesota Department of Agriculture, Dairy and Food, who recalls that the first intimation of the blending situation came about in his state in late 1958 and early 1959. This development, he said, resulted in an amendment to the state fertilizer law which provided for a licensing of "those blenders who mix plant food materials to a customer's order without a guaranteed analysis or ratio of the mixture," as was required by our fertilizer law.

**This meant that any blender or mixer could accept soil tests and mix plant food materials according to the soil test and crop requirements, provided that he applied for a blender's license and received such a license from our department. The purpose of this blender's license was to permit this kind of plant food distribution, but at the same time to regulate this segment of the industry in exactly the same manner that the graded fertilizer industry was regulated.**

"This means that our inspectors take field samples of these blended mixes exactly in the same manner as they would of a bulk grade or a bag grade. If the analysis of the blended mix indicated that the blender was not mixing the plant food materials according to the net weight guaranteed on the invoice, our department could then either cancel his license, or refuse to renew it until he showed cause as to why such action should not be taken."

#### Better Than Expected"

"We went into this program with some apprehension, especially when some states had already taken the attitude that a fertilizer mixture could not be sold unless it was guaranteed as to grade, and some states limited those particular grades or ratios. However, I must admit that these blenders have done a better job than I expected they would do as far as the analyses we had made on a good number of these blended mixes."

"It was not difficult to take samples from stationary blending plants where we could actually take the sample from the elevator leg, or from the delivery pipe, or from the standing truck. Our biggest difficulty was with the blending truck, or mobile blending unit," Mr. Bergman said. He added that some of these trucks utilize a conveyor belt which made it easy for the inspector to take a

sample when the truck stopped. Other types, however, presented sampling problems where the inspector had to catch the material as it was thrown out from the spreading fan.

"These blending plants had many other engineering problems," he went on, "especially the problem of segregation of materials in the blending. Now, however, I am informed that the plants can make physical specifications as to particle size, particle shape and specific weight of their plant food ingredients, so their mixture will not segregate while it is being delivered from the plant to the distribution point. Therefore, we can see that this blending process has stimulated the plant food suppliers to make better and more uniform plant food materials."

"As far as the future is concerned, I believe that eventually our soil agronomists will have enough information so that they will be able to recommend specific ratios or grades which should be used for a particular area. I assume this will mean that we will then have possibly 10 to 15 different ratios, such as 1-4-4, 1-2-1, 1-3-2, etc., and perhaps two or three grades for each one of these ratios. This probably would be the most practical and economical way for a fertilizer user to buy his fertilizer product, and at the same time it would make it much easier as far as control work is concerned. It would also make it easier for the fertilizer manufacturer to make a better product which would meet his guarantees."

"However, our biggest job at the present time is to educate the farmers to use more fertilizer. If we restrict grades and ratios at the present time, we may also restrict the use of fertilizers. Of course, when the time comes for restricted grades and restricted ratios, then customer formula blends would disappear and the blending plants would mix regular grades."

"One of the biggest difficulties the control official has is in obtaining an official sample of a grade or blend. I am sure that the fertilizer manufacturer will ever increase the efficiency of his operation so that instead of stockpiling a fertilizer grade, he will be able to accept a farmer's order, whether it is for a grade or a blend, in the morning and be spreading it for the farmer that same afternoon. This, of course, will happen whether it is a blended fertilizer or a regular grade of fertilizer."

Although there are practically no liquid or dry fertilizer blending plants in the state of South Carolina, a number of registered fertilizer mixers do have bulk spreader trucks, according to Dr. Bruce D. Cloaninger, director of Fertilizer Inspection and Analysis, Clemson Agricultural College. The spreader trucks, he says, are used solely for applying mixed fertilizer on pastures and other land for farmers.

"To cope with the so-called bulk blenders, the Fertilizer Board of Control in 1959, approved the operation of blender trucks in one of the following categories:

1. Either as a registered mixer to blend and distribute only approved ratios and minimum analysis grades.
2. That the farmer or his authorized agent accept delivery of the material he desires spread at the fertilizer plant, dealers' warehouse or on his farm, after which the responsibility would be solely that of the farmer."

Dr. Cloaninger says that there is but one liquid fertilizer plant operating in the state. It has been in op-



**INDUSTRY LOOKS THE SAME**—Industry leaders in discussion of trends and current conditions within fertilizer trade, see numerous changes in offing. Industry is undergoing modifications in credit policies, distribution patterns, manufacturing technology, and in extending new services to customers. Above, familiar front-end loader dumps bulk load into bed of spreader truck to be taken directly to farm for application. Rise of this practice has caused controversy in some quarters, but many state that prevalence of method will continue. State control officials, once opposed to new style operation, have devised ways of checking such mixes.

eration less than a year and services an area with a radius of about 25 miles.

Dry blending fertilizer plants have not yet come to Oklahoma, but there exists in the state some liquid blending operations, according to Parks A. Yeats, director, Seed, Feed and Fertilizer Division, Oklahoma Department of Agriculture. He said that liquid fertilizer plants are apparently on the increase in Oklahoma, with the annual tonnages on the increase each season. Two new liquid blending plants were established in the state during the past year, he said, and others have been doing business for a number of years.

Although dry blends are not manufactured in Oklahoma, Mr. Yeats says that at least one out-of-state firm ships blended materials into Oklahoma. "We have had no difficulty whatever with this company in meeting guarantees, except on one or two samples where undoubtedly there was some segregation," he reports.

(See further comments of control officials in DeWitt Bishop's article on page 20, this issue.)

Questionnaires returned just before press time indicated that excessive rains in many parts of the nation, particularly in the Midwest, South, and northeastern states, had slowed fertilizer sales somewhat early in May. An increasing number of references were also made to the revised farm program and its foot-dragging effect on fertilizer buying.

Some observers expressed belief that inclement weather encouraged an additional number of farmers in the midwest to retire more feed grain acreage under the Emergency Feed Grain Program.

The later returns, therefore, could put a slight damper on the earlier enthusiasm about this season's tonnage. It is evident from comments made from the latest returns, that this year's movement may not exceed that of last year by very much.

The price position in most fertilizer materials is reported as being more firm than in the past. Some potash suppliers and nitrogen producers have recently announced price advances to begin at various times in the future.

## FERTILIZER POTENTIAL FOR ALABAMA APPEARS PROMISING

**SYLACAUGA, ALA.**—Howard Parker, Parker Fertilizer Co., Sylacauga, Ala., predicted in his returned questionnaire, that by 1970, a possible 2 million tons of fertilizer may be used in Alabama as the basis of a \$1 billion agricultural economy in the state. (Present figure: \$500 million.)

Observing the Alabama agricultural scene in reference to the fertilizer potential, he said "farms are consolidating in Alabama, and the marginal farmer is on the way out. The state will use 5% more mixed fertilizer in 1961 than it did in 1960, but possibly a slight loss may be seen in nitrates since some farmers did not topdress small grains as heavily as they did in 1960. About 90% of corn is new hybrid."

"Cooperatives are making headway in the state . . . they may reach 100,000 tons this year. Large companies, too, are very active, but smaller companies, unless diversified, are facing rough going."

"All types of agriculture will be fully mechanized in three or four years. The biggest concern is that very few young farmers are staying in agriculture. When their parents pass on, they sell the farm, divide up the money and move to the towns and cities. A modern farm of 320 to 640 acres requires too much capital outlay for the average young farmer."

"Alabama should have an agricultural economy of \$1 billion by 1970. If we reach that economy, we will sell 2 million tons of fertilizer."

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Instructive, colorful, easy to understand handbooks and folders are geared to stimulate fuller plant food usage. Through carefully chosen themes, farmers, lawn owners, others are made aware of new developments and special opportunities in the use of plant food. In the past two years alone, industry and advisory groups have requested more than 285,000 handbooks for distribution in their areas. Titles included: Fertilizer Placement, Hidden Hunger, Forest Fertilization, Better Lawns, Garden Growing, and Limiting Factors in Crop Production. During the past year and a half, over 800,000 folders have been distributed on Plant Food Your Corn Absorbs, Hidden Hunger, Fertilizer Placement and others.

### \*THROUGH GRAPHICS

Slide sets, wall posters and films provide visual assistance to teachers, dealers and other information people to help them sell the advantages of plant food in factual, non-technical ways. During the past year, more than 1,200 requests were filled for slide sets on Alfalfa Production, Soybean Production, Potash Deficiency, and Fertilizer Placement. Over 10,000 multi-colored posters were sent out providing visual demonstrations of Plant Food Utilization; Corn, Cotton and Legume Starvation Symptoms, etc. Over 180,000 people viewed Institute films on such topics as Growing Alfalfa Successfully, The Plant Speaks series, and Potash Production in America.

### \*THROUGH OUR MAGAZINE AND NEWS LETTERS

To speed the latest information on plant food usage to the public through agriculture and industry leaders, the Institute publishes a magazine and distributes regional News Letters. Feature articles on pertinent soil fertility findings are carried in Better Crops with Plant Food. More than 30,000 industry and advisory leaders receive this bi-monthly publication. Last year an additional 300,000 reprints of crops and soils articles were disseminated to selected influence groups. Potash News Letters treat special subjects and briefs on timely topics. More than 130,000 Potash News Letters were used by industry and advisors last year.



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## \*THROUGH ON-THE-SCENE WORK IN REGIONAL INTENSIFIED FERTILITY PROGRAMS

Whether cooperating closely with Georgia's remarkably successful Intensified Soil Fertility Program, or with the Pacific Northwest's equally successfully Tri-State Grassland Demonstration Program, or with similar programs in the Midwest, the East and Canada, Institute specialists are on the job wherever and whenever their services can be of help. Working closely with official agriculture and with industry, American Potash Institute specialists assist in arranging meetings, setting up demonstrations, interpreting results and getting information to farmers who use plant food.

## \*THROUGH SERVICES TO LOCAL PLANT FOOD SOCIETIES

Institute staff members serve in executive capacities with joint advisory-industry bodies, working to develop closer cooperation between industry and government agriculture advisors.

At present, Institute staffmen serve as president of the Soil Science Society of America; president, vice-president, or secretary-treasurer of statewide plant food promotional and educational societies in Missouri, Texas, Georgia, Minnesota, Mississippi, Alabama, Louisiana, and Arkansas; chairman of the Pacific Northwest Plant Food Association Soil Improvement Committee; and other important committees in California, Pennsylvania and Canada.

## \*THROUGH TROUBLE SHOOTING IN THE FIELD

Tissue test demonstrations in the field are used by Potash staff members to give fertilizer industry representatives and farmers first-hand knowledge of new methods of determining plant food needs. Other demonstration projects of this sort have included application methods, fertility demonstrations, plant deficiency symptoms, feeding of specialty crops and many others. Little known are projects such as leaf analysis surveys—many of which have uncovered serious plant food deficiencies in orchard, potato, sugar beet, corn, and cotton growing areas.

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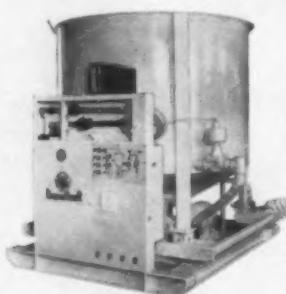
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W. Harold Schelm

## Solutions Assn. Names W. Harold Schelm Secretary

PEORIA, ILL.—W. Harold Schelm has been named executive secretary of the National Fertilizer Solutions Assn., the group has announced. Offices of the association are being moved from Chicago to room 901, Jefferson Building, Peoria, Ill., according to Donald Humphrey, NFSA president.

Mr. Schelm is one of the group that originally founded the association and has been active in its work for many years. He previously headed a company that manufactured tanks and application equipment used in the industry.

Mr. Humphrey said that the publishing activities of the association will continue to be handled by the firm of Storms & Westcott in Chicago.

## Materials Handling to Be Theme of 1961 Round Table Sessions

WASHINGTON—Program plans are developing for the Fertilizer Industry Round Table Conference scheduled to be conducted at the Mayflower Hotel, Washington, D.C., Nov. 8-10, according to Dr. Vincent Sauchelli, chairman.

Theme of the 1961 session will be "Materials Handling," divided into four parts: unloading, storage, shipping, and dust control. These subjects will cover fertilizer products comprising gas, liquid, and solids. Papers on these subjects will be presented, then the sessions will be thrown open for question-and-answer periods from 2-1/2 hours' duration.

Postal cards have been sent out to the Round Table membership asking for additional problems to be outlined for discussion at the November meeting.

The Round Table executive committee comprises Dr. Sauchelli, chairman; H. L. Marshall, Olin Mathieson Chemical Corp., Baltimore, secretary; J. B. Reynolds, Jr., Davison Chemical Div., W. R. Grace & Co., Baltimore, and Albert Spillman, Fertilizer Manufacturing Cooperative, Inc., Baltimore.

## Chipman Appoints Two

ROUND BROOK, N.J.—Appointments of H. W. Swenson as treasurer and W. J. Jankowski as assistant treasurer of Chipman Chemical Co. have been announced by W. H. Moyer, president.

## CLASSROOM ATMOSPHERE IN CALIFORNIA PLANT

KENNEWICK, WASH.—The California Chemical Corp. fertilizer plant here has become a classroom for eight young Mexican engineering graduates.

The youthful engineers, who arrived on April 24, were sent by Fertilizantes Del Istmo, a Mexican chemical firm with a fertilizer plant under construction at Minatitlan in the Mexican state of Vera Cruz.

The Mexican plant will utilize production processes similar to those at Calchem. The eight engineers, all graduates of Escuela Superior De Ingenieria Quimica E. Industries Extractivas, a Mexico City engineering college, will operate the Mexican plant.

Alberto J. Echevesta, who represented the Fertilizantes firm in Cuba until the Castro regime took over his country, is the leader of the group from the Mexican firm. Aldo Arrullier is accompanying the men as a representative of the Chemical and Industrial Corp., Cincinnati, Ohio, which built the Calchem plant and is also constructing the one in Mexico.

Fertilizer produced in the Mexican plant will be used principally for growing sugar cane in southern Mexico.

## New Titles Announced For NAC Assn. Officers

WASHINGTON, D.C.—A plan for the reorganization of the National Agricultural Chemicals Assn. staff was announced June 6 by Dr. George R. Ferguson, president of the association, following a regular meeting of the board of directors.

Effective Sept. 1, 1961, the beginning of the association's fiscal year, the board approved an organization plan providing for a chairman and a vice chairman of the board of directors, whose method of election and duties will be the same as now prescribed for the president and the vice president; a full time president to replace the present position of executive secretary; a secretary; a treasurer; a technical director; and a director of information.

Named by the board of directors to fill these positions were Dr. George R. Ferguson, president of Geigy Agricultural Chemicals, division of Geigy Chemical Corp., Ardsley, N.Y., chairman of the board; H. F. Tomasek, president of Chemagro Corp., Kansas City, Mo., vice chairman of the board; L. S. Hitchner, president of the association; Jack Dreessen, secretary; Miss Lee H. Grobe, treasurer; J. A. Noone, technical director, and Denis Hayley, director of information.

In making the announcement of the reorganization, Dr. Ferguson stated, "This reorganization plan creates career positions for all operating units of the association staff, with duties and responsibilities clearly defined. The board feels that the plan will provide much improved coordination of all association activities for the benefit of all association members and the entire industry."

## Monsanto to Construct NH<sub>3</sub> Terminal in Iowa

MUSCATINE, IOWA—Monsanto Chemical Co. announced on June 9 that it will build a 15,000-ton anhydrous ammonia terminal at a site four miles south of here on the Mississippi River.

Tom K. Smith, Monsanto vice president and general manager of the company's agricultural chemicals division, said that construction of the storage facility will begin in June and should be completed in December, 1961.

The unit will be located on a tract of approximately 500 acres that offers convenient access by both railroad and barge from the company's ammonia manufacturing plants at El Dorado, Ark., and Luling, La.

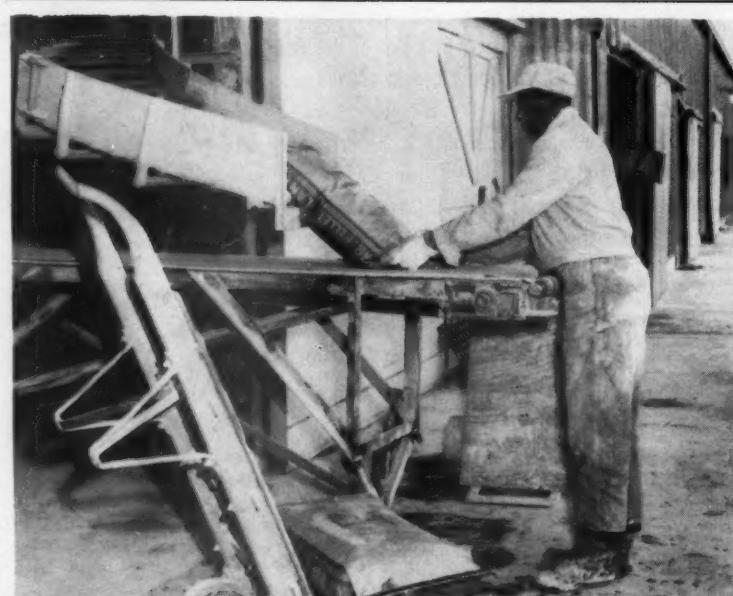
## Japanese Expect Exports Of Fertilizers to Jump

TOKYO—New export goals for fertilizer chemicals have been set by Japanese manufacturers for fiscal 1961. The objective is shipment of 1,364,000 tons of fertilizers valued at some \$71 million.

According to reports from Japanese sources, this constitutes an increase in value of 24% over the past fiscal year when estimated actual achievement ran to \$57,244,000 for an overseas shipment of 1,207,000 tons.

The export target for nitrogenous fertilizers was put at \$65 million involving a total of 1,205,000 tons, that for phosphatic fertilizers at \$5,700,000 and others at \$300,000.

The ammonium sulfate export was set at a figure of 800,000 tons.



**BREAKAGE REDUCED**—Use of multiwall bags made from extensible kraft paper is said to reduce bag breakage in the plant, in transit, and in storage. The above photo was taken at Farm Belt Fertilizer & Chemical Co., Kansas City, Mo., which claims a reduction of 40% in bag breakage with in transit shipments, since utilizing the extensible type of container. The paper has stretchable properties enabling it to absorb shock, according to its makers, Hollingsworth and Whitney Div. of Scott Paper Co. The paper is sold under the trade name of "Expana-Kraft."

## New Arkansas Law Provides for Licensing Of Operators in State

LITTLE ROCK, ARK.—The new Agricultural Application Service Act passed by the Arkansas General Assembly, went into effect June 8. The new law provides for licensing and financial responsibility for custom applicators of certain agricultural chemicals by aircraft and ground equipment.

The terms of the new law apply to anyone "engaged for hire in the application of economic poisons, herbicides, desiccants or defoliants to crops, orchards, rights-of-way or woodlands" in the state.

In order to obtain a license, a person must apply on forms supplied by the State Plant Board, pay the fees, list each unit of equipment to be used, and submit proof of financial responsibility for damage that might be caused. Out-of-state operators must designate a resident agent.

In order to prove financial responsibility, which must be maintained during the life of the license, the applicant may show proof of unencumbered net worth, deposit with the Plant Board the money or approved securities, deposit a bond issued by a corporate surety company, or file with the board an insurance policy of an insurer or surplus line broker authorized to do business in the state.

The amount of financial responsibility to be set in the regulations that will implement the act cannot be less than \$2,500 or more than \$10,000.

## Massachusetts Moves to Regulate Pesticide Use

BOSTON, MASS.—Establishment of a special board to regulate and control the use of pesticides was recommended to the Massachusetts legislature late in May.

The recommendation came from a special commission comprising representatives of the State Departments of Agriculture, Natural Resources, Public Health, and Public Works as well as the State Conservation Council, Reclamation Board and the University of Massachusetts.

The commission recommended that the board be empowered—not required—to issue licenses or permits for the application of pesticides and to promulgate regulations for use of such materials by any person or agency within the state.

"Although pesticide chemicals can and have been applied successfully without due hazard by governmental and non-governmental agencies since World War II, the very nature of these materials makes it imperative that the interests of the public be fully protected in any such control efforts," the commission said.

"These materials are unquestionably of major significance in the protection of public health through the control of disease vectors, the economic production of food, forage and fiber and in the suppression of unwanted plant and animal pests within the Commonwealth."

## New Product Introduced By Victor Chemical

CHICAGO — Victor Chemical Works, Division of Stauffer Chemical Co., has developed a new, stabilized form of methyl parathion. It is being introduced on a national basis under the trade name "Stabilized T-80 methyl parathion."

The new product is said to have 80% concentration which, the makers say, yields drier, more free-flowing dust bases. They add that such formulated dusts also contain less solvent, reducing evaporation.

Laboratory and field tests have indicated that dust formulations of the new product are stable over a wide range of conditions, Victor says.

## Canadian Association Announces Conference

WINNIPEG, MAN.—The Canadian Agricultural Chemicals Assn. will hold its 9th annual meeting and conference at Mont Tremblant Lodge, Mont Tremblant, Quebec, Sept. 18-20. Mont Tremblant is 90 miles north of Montreal in the Laurentians. Details of the program agenda will be available later.

## Chicago Hotel Named for Fertilizer Safety Group

CHICAGO—The National Safety Council has announced the dates and locations of its various section meetings in Chicago, Oct. 16-20. The fertilizer section will meet at the Pick-Congress Hotel, NSC says. Program plans and other details will be announced later.

## JAPANESE BEETLE GAINS FOOTHOLD IN SOUTH CAROLINA

CLEMSON, S.C.—The Japanese beetle, an insect that costs the American public more than \$10 million a year, has established a foothold in South Carolina, the state extension service reports.

Until recently, infestation in South Carolina was confined to a small strip along the state line in Oconee, Pickens and Greenville counties. However, latest reports from the South Carolina State Crop Pest Commission at Clemson show that the beetle has recently been found in other scattered sections of the state.

This insect, which takes its name from its native country, was first discovered in the United States at Riverton, N.J., in 1916. It has since multiplied and spread until it now heavily infests most of the northeastern states and a growing number of scattered areas further inland.

Once established, this pest damages lawn grass, flowers, trees, shrubbery, fruits and certain field crops, such as corn. Yet, the Japanese beetle spends only one month of its one-year life span above ground. The other 11 months, the insect stays in the ground in the form of a white grub, feeding on roots and underground stems of plants, particularly grasses.

Dr. J. H. Cochran, head of the State Crop Pest Commission, has warned South Carolinians that these insects emerge from the ground usually about the first or middle of June.



Because the fruit and vegetable crops were treated with

## TRIANGLE BRAND COPPER SULFATE

Regular or basic copper sulfate should be mixed in insecticide-fungicide sprays and dusts to insure appetizing, attractive fruits and vegetables that consumers "reach for."

When used in fertilizers, Triangle Brand Copper Sulfate helps to enrich the soil, resulting in healthy, profitable crops.

Help your customers produce more profitable crops. Use regular or basic Triangle Brand Copper Sulfate in your fertilizer and insecticide-fungicide formulations...it will mean more money in your pocket!



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# Thorough Mix, Gentle Handling Of Blends Prevent Segregation

By T. Alun Powell  
Munson Mill Machinery Co.  
Utica, N.Y.

**A**CHIEVING quality blend analysis in fertilizers is a matter of prime importance to manufacturers. The occasional failure of blended fertilizer mixes to measure up to analysis is a baffling problem to careful manufacturers who are confident that their blends have been formulated accurately.

In response to requests for aid in finding an answer to this problem, our company undertook a survey of fertilizer plants located over a wide area of the country. The object was to study blending operations in which rotary batch mixers were used, to see if common problems might suggest overall solutions.

The results showed that in almost every instance where low-quality blends had occurred, the reason could be traced to faulty charging of the mixers or to improper storage or handling of ingredients or the finished product.

It is evident, from the survey, that effective methods are available to help overcome such problems. It is possible to obtain high-quality blends with rotary type batch mixers. This article is designed to aid such manufacturers in achieving satisfactory results.

While the principles of mixing and blending are similar in all applications, there are many variables to be considered—the nature of materials, the various specific gravities of the materials to be blended, the mechanical installation of the mixer and accessory equipment used in conjunction with it. For clarity, it will be assumed that the rotary batch mixer is generally used in one of two methods:

1. An installation where the mixer is an integral part of a batching and blending system and where it is tied in with a batching hopper, which permits the accumulation and pre-weighing of all the ingredients peculiar to one batch.

2. An installation where the mixer is serviced by skip hoists, bucket elevators or — frequently — front-end loaders.

In the first type of installation, all the ingredients are gathered previously, making it possible to introduce them into the mixer almost simultaneously. This assures that all ingredients will receive proportionately the same blending action and blending time. In this type of installation, it is necessary only to determine the minimum length of time to achieve the desired blend quality. In some simple formulations this can be a minimum time of one to two minutes.

In blends which involve trace quantities of critical materials, it may be necessary to increase the blending cycle by as much as ten minutes in order to achieve the required blend. Of the two methods, the first appears to offer consistent optimum results to the user.

However, we frequently have to deal with the second type of installation using skip hoists, bucket elevators or front end loaders. In this type of installation, the materials to be blended must be introduced into the mixer consecutively. This frequently involves some time, particularly if the source of materials is remote from the mixer. The condition

may be aggravated by the need to stop during the transporting cycle to weigh the materials being carried in each particular load.

In an installation such as this, it follows that the materials which are first introduced into the mixer will derive the benefit of the longest blending cycle. Conversely, the last ingredients to be added are not always in the mixer long enough to be intimately blended with the previously charged materials. This method of charging the mixer is sometimes responsible for a sub-standard quality of blend. To lessen the adverse effects of this consecutive type of loading, one or more of the following suggestions may be utilized to achieve a marked improvement in the blend analysis.

Where the ratio of materials to be blended is fairly close—a similar quantity of each ingredient to be blended—then a marked improvement in the blend quality can be achieved by alternating the charge of materials into the mixer.

To illustrate, suppose a formula is made up of the three ingredients A, B and C in equal amounts. If one-half of A is charged, followed by one-half of B and one-half of C, and then repeated, it will minimize the ill-effect caused if the full quantity of each ingredient were introduced consecutively. This permits a shorter blending time to achieve the required blend and produces a more homogeneous and uniform blend.

In another hypothetical formula, one might have three basic ingredients in which a trace quantity of a fourth ingredient is to be added and blended. In a case like this, it is again advisable to split the quantities of A, B and C as described above and to introduce the trace quantity of the fourth ingredient midway during the charging cycle. This permits the trace quantity to become disbursed midway in the batch charging with the result that the disbursement throughout the blend will be achieved more quickly and more uniformly. It should be remembered that the last materials into the mixer sometimes are not retained long enough to achieve the desired blend.

This latter method can be refined even further if the trace material is also split into two or three parts and introduced in between quantities of the carrier or principal ingredients.

To comprehend the reason for this method, one must understand the principles involved in the blending action of the rotary mixer. The first materials to be charged into the mixer drum, when it is empty, will find their way down the intake cone of the drum to a point where they are caught up by the lifters. Immediately upon being caught up by the lifters, the material starts to rotate with the drum and is directed toward the discharge end of the mixer drum. As more and more materials are charged into the drum, the drum begins to fill up and the incoming materials rotate with the drum independently of the action caused by the lifters.

However, during all this time, the materials which have been caught up in the lifters are unable to escape from the mixer drum because of the closed position of the discharge gate. So material folds and falls from the lifters into the

center of the drum. When a drum is loaded with the complete batch of materials there exists at all times a rotary action imparted by the movement of the drum. There is also a diagonal action caused by the materials falling away from the double cones of the drum. In addition, a cutting out and dumping action, sometimes referred to as folding, is created as the lifters rotate with the drum. Upon reaching the apex position, they discharge their contents back into the center of the drum. This action produces intimate and homogeneous blends of materials.

It should be noted at this point, that an intimate blend of material may be achieved, regardless of the method used to charge the mixer, if sufficient time can be permitted for this cycle. However, in view of today's requirements, it would seem desirable to achieve the blend quickly and discharge the mixer to be ready for succeeding batches. It is important, therefore, to take particular care in the methods used in charging ingredients into the mixer.

Some installations, where a front-end loader is used for charging the mixer, also include a floor-level hopper connected to either an inclined screw elevator or a bucket elevator. Where an elevator or a conveyor is used, they should be stopped during the loading cycle until the hopper which services them has become completely filled.

When it is full, the elevator or conveyor can be started up to empty materials from the holding hopper into the mixer.

In most instances, the capacity of these loading hoppers is only a small part of the mixer's blending capacity and this may necessitate repeating the process two, three, or more times depending upon the hopper's capacity.

#### Proper charging of the mixer is

necessary to satisfactory blending and obtaining the highest quality blend analysis, but adequate methods of storing and handling the ingredients prior to blending are prerequisite to achieving a quality blend.

Well-engineered rotary mixers produce no degradation of material or product size. What, then, is the origin of fines which are so often a source of complaint? For the answer to this, a study of methods used for bulk storage and transporting ingredients into the mixer, gives some significant pointers.

It is well known that granular material tends to segregate in storage and that the last portion of the materials remaining in a bin will invariably consist of fines. Whenever a front-end loader is used to remove material from bins, it must be remembered that as the bottom of the bin is approached, more fines will be found. These may upset the blend analysis of the product. There is no simple expedient to overcome this condition other than using good judgment in trying to use as proportionate an amount of the fines as possible with each batch, rather than to leave the fines to accumulate until the last batch or two are being formulated.

Where the practice of unloading bulk material involves free falling of this material from an unloading elevator, baffle boards should be included within the bin to break up the momentum of the falling material and lessen the tendency towards breakage and fines.

Just as prior handling of materials is important, so is subsequent handling of the blended product. Despite the greatest care to introduce materials into a mixer to achieve a homogeneous blend, this blend can be quickly destroyed or upset by subsequent careless handling.

It must be remembered that the rotary action of the mixer never ceases throughout the entire discharging cycle and that the same blend quality is found in the last portion of the blend as in the very first portion discharged. What then, causes this blend classification or stratification? For this answer one must look to the method employed to handle the material from the mixer before it finally reaches the point of distribution.

Where the blended product is bagged directly from the mixer, there is very little classification or stratification.

Turn to MIXING page 41



**CHARGE WITH CARE**—Among critical points in preparing a mixed fertilizer product of acceptable composition and condition, is that of charging the ingredients into the mixer. Author says adequate time must be allowed after completion of charging to allow complete blending of last ingredients charged into the mixer. Where front end loader is used in conjunction with screw elevator or bucket elevator, author suggests that such conveyors should be stopped long enough for the hopper to be filled before ingredients are charged into the mixer.



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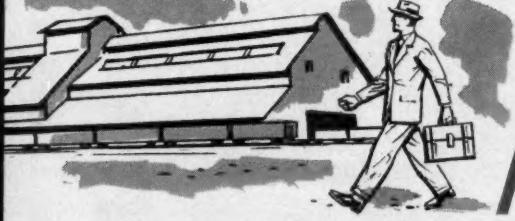


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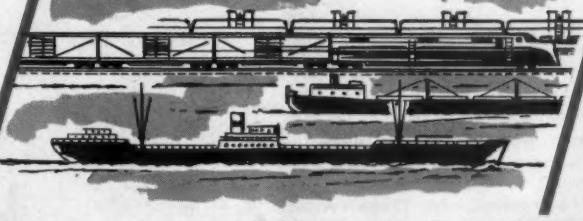
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## Professor Regards Reduction of U.S. Food Supply as 'Suicidal Demand'—Advocates Storage Adequate to Keep Nation 2 Years

**T**HAT THERE IS in reality no "farm surplus" in view of potential needs of the nation in the event of nuclear hostilities is the point being stressed by a University of California soil scientist, who advocates the garnering and widespread distribution of enough food-stuffs to give Americans at least a subsistence for a period of two years.

Dr. Perry R. Stout, chairman of the department of soils and plant nutrition, University of California, Davis, indicates that farmers should utilize more fertilizers and pesticides to produce more food, and that government officials should condone such activity.

Agriculture in the U.S. is based upon industry, he says, since its fertilizers, pesticides, fuels and machinery are all supplied by various industries. Consequently, he reasons, in case of a large-scale nuclear attack with primary targets being our concentrated industrial establishments, agriculture would become paralyzed immediately. This would be true in spite of the wide dispersal of agriculture, he says.

Dr. Stout discusses the subject as follows: "Following such an attack, agriculture in the U.S. cannot be restored until its industrial base becomes re-established. Only 10% of our total population is engaged in primary farm production and even these conduct their operations with machinery on an industrial basis.

The large question of the day which must be faced by the people in agriculture is this: **'Where is the food to come from while the industrial complex is being restored?'** We must make note of the facts that we do not have a farm population capable of raising food by hand; our draft animals are gone; displaced populations from cities would not be experienced in agriculture nor would there be hand tools to give them or food to nourish them until the crops could be grown. Moreover, their real place of duty should be at their regular posts working toward restoring essential industrial facilities.

**"The American press (and with it American thinking) is preoccupied at present with a fashionable spurge of viewing with alarm the so-called 'farm surplus.' It is indeed fantastic that so many words should be written persistently in support of a suicidal demand to reduce the food supplies available in the U.S. It is especially tragic that agriculturists themselves have been caught up in the maelstrom created by fuzzy metropolitan thinking on matters pertaining to agricultural productivity and have joined in with the clamor to reduce our agricultural output.**

"Where security is involved, the American citizen places trust and confidence in specialists. Among others: firemen, policemen and military and public health officials stand guard on the community to national level. However, official responsibility for assuring the primary food supply is being taken for granted. Except for times of war, American agricultural production is considered an economic evil.

"Admittedly, we are in a cold war now. To assure its remaining cold, our military effort is being designed to implement a 'policy of deterrence.' Within the total effort so directed, the position of agriculture, strangely enough, has been overlooked. Former slogans of 'Food will win the war,' or 'a soldier marches on his stomach' have given way to irresponsible

and exceedingly misdirected emphasis on 'farm surpluses,' the 'farm problem,' etc.

"It is my contention—and this I wish to emphasize most strongly—that possession of a national food cache under the unsettled circumstances of the present day preparations in armament—would be equivalent to deterrent value in our stock piles of weapons, stores of ammunition or reserves of strategic raw materials. Possession of a food cache could very easily be the deciding factor which would cause containment of our prospective military antagonists to planning stages only.

**"To hungry citizens—survivors of stricken metropolitan areas—the grain stored in Kansas might just as well not exist. What we must have instead is an assured food supply within easy walking distance of every man, woman and child in these U.S. There must be enough to supply his nutritional needs for a full two years.**

"The first year will be needed to restore industry and transportation before further agricultural production of significance can be resumed. The second year will be required to allow new crops to come in and be harvested.

"As for our present surplus grains, they must be gotten out of the warehouses and converted to animal protein. Carcasses of meat animals so derived must be deboned, desiccated, compressed and stored. Resources of agricultural experiment stations and food preservation industries must be called upon for all-out research programs to develop methods for keeping foods stored for indefinite periods into the future.

"The military paradox under a policy of deterrence lies in the conflicting needs, first, of keeping our national striking potential secret in order to minimize counter measures, and second, the need to reveal the size of the 'Big Stick' sufficiently so that possible adversaries will really know that we possess the power of full retaliation.

So far, there have been many public expressions of a will to retaliate even in death, but none imply an equivalent will to recover and survive after retaliatory action. It is inescapable that military planners external to the U.S. are fully aware of America's vulnerable industrialized agriculture and are taking it into account as the Achilles' heel exposed through an otherwise respectable coat of armor.

**"We look upon Russia, for example, as a potential military adversary, we find no concerted haste toward industrializing their agriculture completely. There remains in Russia a large peasant population engaged in agriculture. Their draft animals become a distinct asset under present circumstances of conflict with nuclear striking power.**

"Speaking colloquially, the role of the national food cache in relation to military preparedness is as follows: Each of the two atomic Colossi are carrying a large sized nuclear club—exposed to view sufficiently to back up their often repeated mutual pronouncement: 'If you hit me, I'll hit you back just as hard and probably harder.' The Russian Colossus is thinking, 'If I hit Sam first and knock him flat I might go down at the same time, but at least I'm going to be able to recover before he does and I'll settle him before he wakes up.' Unfortunately, Sam is

narrowly preoccupied with military hardware and hasn't thought of a recovery phase with the necessary food supply to support it. He has been enured into lack of concern for his bread basket on the presumption of a 'national problem of farm surplus.'

"I cannot say that our current agricultural surplus is any way a boon to our defense program at the moment. A considerable undertaking lies ahead before it can become use-

ful or usable. I do think, however, that its existence is to the good. I would hope that the Russians mistrust the noises the American press has been making about our farm surplus, as a backhanded way of informing them of our strength with respect to available stored food supplies. On close inspection, however, it must occur to them that our surpluses are not of a kind nor are they effectively dispersed in ways to make them meet post nuclear holocaust needs."

### Operation Bootstrap . . .

## Simplot Utilizes Trucks and Rail to Move Entire Plant 250 Miles, Piece by Piece

**POCATELLO, IDAHO**—The moving of a complete fertilizer plant more than 250 miles, from Anaconda, Mont., to Pocatello, Idaho, is presently in progress, according to W. Grant Kilbourne, general manager of the minerals and chemical division of J. R. Simplot Co.

The Austin Co. of Seattle, Wash., has contracted to accomplish the job in 90 days. The task, which Mr. Kilbourne says could be compared to moving an entire town, will be accomplished by dismantling the modern ammonium phosphate plant, moving the components by truck and rail to the Idaho site and re-erecting the production facilities in new buildings. Foundations and other prerequisite facilities are now under construction at Pocatello, Mr. Kilbourne reports.

A large phosphoric acid plant, which will double the present Simplot capacity, is also under construction to supply the new facility.

The Idaho location for the plant which is being moved is adjacent to the J. R. Simplot fertilizer plant near Pocatello. The ammonium phosphate

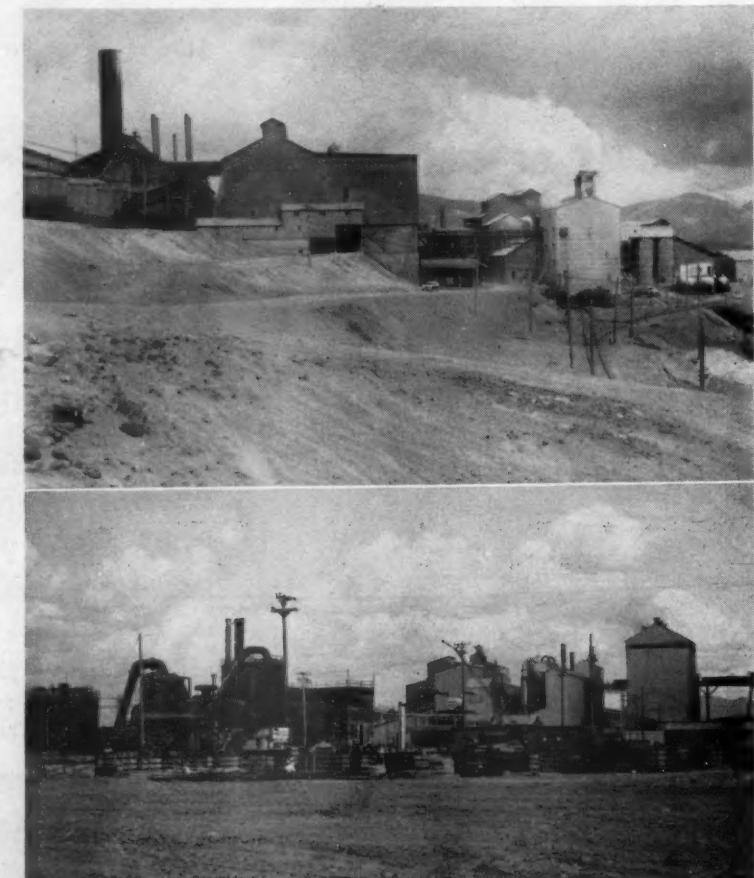
plant was put into production three years ago by the Anaconda Co. It was purchased by Simplot and operated one season in Montana before being moved.

Mr. Kilbourne said it was decided to move and reconstruct the plant at Pocatello in order to integrate fertilizer production facilities for the minerals and chemical division. The new location is nearer the supply of raw materials, the phosphatic ore being mined at the Gay Mine near Fort Hall, Idaho and at the Conda Mine near Soda Springs, Idaho.

Materials handling facilities at the former Anaconda triple superphosphate plant will also be moved and incorporated in an expanded Simplot soilbuilders plant at Idaho Falls, according to Mr. Kilbourne.

R. A. Jones, formerly manager of Anaconda's fertilizer operations has moved to Saratoga, Cal., where he will continue his employment with Simplot in a sales-advisory capacity.

All business functions associated with the Anaconda, Mont., fertilizer office will now be conducted in Pocatello, Mr. Kilbourne stated.



**PLANT ON THE MOVE**—The ammonium phosphate plant of J. R. Simplot Co., at right in upper photo, is being moved from Anaconda, Mont., to Pocatello, Idaho, more than 250 miles away, where it will be re-erected and integrated into Simplot's fertilizer production activities at the Idaho site. Materials handling facilities from the former Anaconda triple plant, at center of top photo, will be moved to Idaho Falls.

In lower picture, workers are seen constructing foundation forms to carry the ammonium phosphate plant being moved to Pocatello. Site of the new plant is adjacent to the Simplot plant seen in the background. The move of plant and equipment is being done by the Austin Co.

# How Union-Camp's 5-Star Multiwall Plan increased a pallet payload by 400 lbs...without increasing its size!

A leading supplier of high density resins\* had been packing his product in 50-lb. sewn-bottom multiwalls. This gave him an efficient, 40-bag (2,000 lb.) pallet load.

When he added a *low density* resin to his line, however, he found his existing bag wouldn't accommodate 50 lbs. of the new resin due to its increased volume. A slightly larger, sewn-bottom multiwall was tried, but this reduced the pallet payload to 32 bags (1,600 lbs.). Net "loss": 400 lbs. Net result: more handling . . . more trips to the warehouse . . . higher cost.

Heightening the pallets to 10 tiers instead of 8, offered no solution—they wouldn't pass through the existing archways. To say nothing of the problem of loading trucks and trailer cars.

#### New bag does the trick

At this point, the 5-Star Packaging Efficiency Plan went to work. Union-Camp multiwall specialists experimented with several different bag sizes and styles. Their solution—a multiwall with a *pasted* bottom and side gussets, a *rectangular*-shaped base—and 20 per cent more capacity!

With the new design, 50 lbs. of the low density resin can now be packed in each bag. Most importantly, the pasted bottom bags can be palletized five to a tier, eight tiers to a skid for

a total payload of 2,000 lbs.—the same as the high density resins.

#### Warehouse space saved

The pasted-bottom bag offered several outstanding advantages. It permitted better use of warehouse space. It increased the yield per warehouseman to 1,000,000 lbs. a month. And it initiated the development of a similar design for the company's high density resins, which could increase the present pallet payload to 2,500 lbs.



Space-saving secret is in bottom of bag. New design (left) with rectangular-shaped base has 20 per cent more capacity than sewn-bottom bag (right).

#### Works for you five ways

Apart from bag construction and materials handling, Union-Camp's 5-Star Plan covers bag design, packaging machinery and specifications control. An improvement in any one of these areas conceivably could result in substantial savings for you. In any case, it costs nothing to find out.

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## \$4 Million Ammonium Phosphate Plant Announced by Minnesota Cooperative

ST. PAUL, MINN.—Bulldozers will break ground June 15 for a new \$4 million fertilizer plant to be constructed by Northwest Cooperative Mills, Inc. of St. Paul, near Pine Bend, Minn. The plant, the first of its type in this area, will produce 100,000 tons annually of ammonium phosphate fertilizer—a product extensively used by farmers throughout the Midwest to stimulate the growth of small grains and row crops. Seven or eight different formulas will be manufactured for farms in Wisconsin, Minnesota, and North and South Dakota.

William E. Jones, general manager of Northwest Mills, estimates that the new plant will employ 100 seasonal workers and 45 permanent workers, when it opens in April of 1962.

Northwest Mills is a \$4½ million feed, seed and fertilizer processing company with manufacturing plants in St. Paul; Winona, Minn., and Green Bay, Wis. It is jointly owned by four regional cooperative enterprises including: the Farmers Union Central Exchange, South St. Paul; Midland Cooperatives, Minneapolis; Central Cooperatives, Inc., Superior, Wis.; the Farmers Union Grain Terminal Assn., St. Paul; and, soon to join, Central Farmers Fertilizer Co., Chicago.

The plant's entire output of ammonium phosphate fertilizer will be marketed through the member cooperatives of Northwest Mills, in accordance with a two year study recently completed.

Raw materials used in production will come partly from local sources,

Mr. Jones said. Anhydrous ammonia will be bought from St. Paul Ammonia Products Co., and North Star Chemical Co. will furnish the sulfuric acid and steam. Phosphate rock will be shipped from the South through Central Farmers Fertilizer Co.

The new fertilizer plant, Mr. Jones indicated, will be one of the most modern in the nation. Process requirements will be 3,000 gallons of water per minute, but actual consumption of well water will be but 300 gallons per minute. The plant will provide its own fuel, water and fire protection systems. All industrial wastes, Mr. Jones pointed out, would be retained at the plant site to prevent possible pollution of nearby rivers or streams. The area will be completely developed for truck, rail, and water transportation facilities.

One of the features of the plant's office building will be a sound-proof auditorium seating 120 people which will be used to accommodate visitors.

## International Activities Stepped Up by Spencer

KANSAS CITY, MO.—Spencer Chemical Co. has expanded its program to market Spencer products on a world-wide basis and to seek foreign investment opportunities, according to John C. Denton, president. He said all sales agreements under which Spencer products have been marketed by U.S. based export agencies have expired and that Spencer Chemical International, a wholly-owned subsidiary formed in 1958, has taken complete charge of the company's overseas operations.

Mr. Denton said the move is a planned expansion of the company's overseas marketing program and added that the manufacture and/or distribution of products not now produced by the parent company in the United States are included in the scope of activities to be undertaken by Spencer Chemical International.

To complement these plans, Mr. Denton said Carl Flesher, a former deputy director for the International Cooperation Administration, has joined Spencer to head a program aimed at seeking out profitable capital investment opportunities overseas. Mr. Flesher will be located at Spencer's general offices in Kansas City.

President of Spencer's International subsidiary is Albertus Slingerland, a native of Holland, who joined the company in 1958 to help plan and establish foreign operations. Mr. Slingerland has established coordinating offices for Spencer Chemical International in Luxembourg.

Spencer Chemical International has entered into an agreement with the domestic company to market agricultural chemicals, industrial chemicals, and plastic products. Spencer Chemical International will also market products supplied from other sources through its own facilities and those of affiliated corporations.

At Spencer Chemical International coordinating offices in Luxembourg, E. F. McGill will be chemical products manager, heading agricultural and industrial chemical sales.

## Two Manufacturers Join in Wisconsin

STEVENS POINT, WIS.—Midwestern Farm Fertilizers, Inc., Stevens Point, has announced purchase of the assets and the trade style of Badgerland Liquid Fertilizers, Almond, Wis.

"Established in 1956, Badgerland is the largest liquid fertilizer manufacturer in the state of Wisconsin," said R. B. Baldridge, executive vice president of Midwestern. The latter firm is the manufacturer of Kickapoo and Badger Brand fertilizers. Kickapoo has operations in Wisconsin at Stevens Point, Hillsboro, Almond and Gratiot. Badger Brand, a subsidiary of Midwestern, has operations at Kenosha, Burlington and Shiocton. The home office of Midwestern is located at Stevens Point.

The new acquisition, Badgerland, will be known as "Kickapoo Liquid Fertilizers," and has operations at Oxford, Portage, Randall and Mazomanie, with the main plant located in Almond, Wis.

## CHEMIST HONORED

HOUSTON, TEXAS—J. Frank Taylor, Midwestern sales manager for Signal Oil and Gas Co., Houston Division, was recently awarded an honorary life membership in the Chicago Rubber Group, sponsored by the Division of Rubber Chemistry of the American Chemical Society, for his work with the group in the past 20 years. Mr. Taylor has held every elective office in the organization, and was president in 1952.

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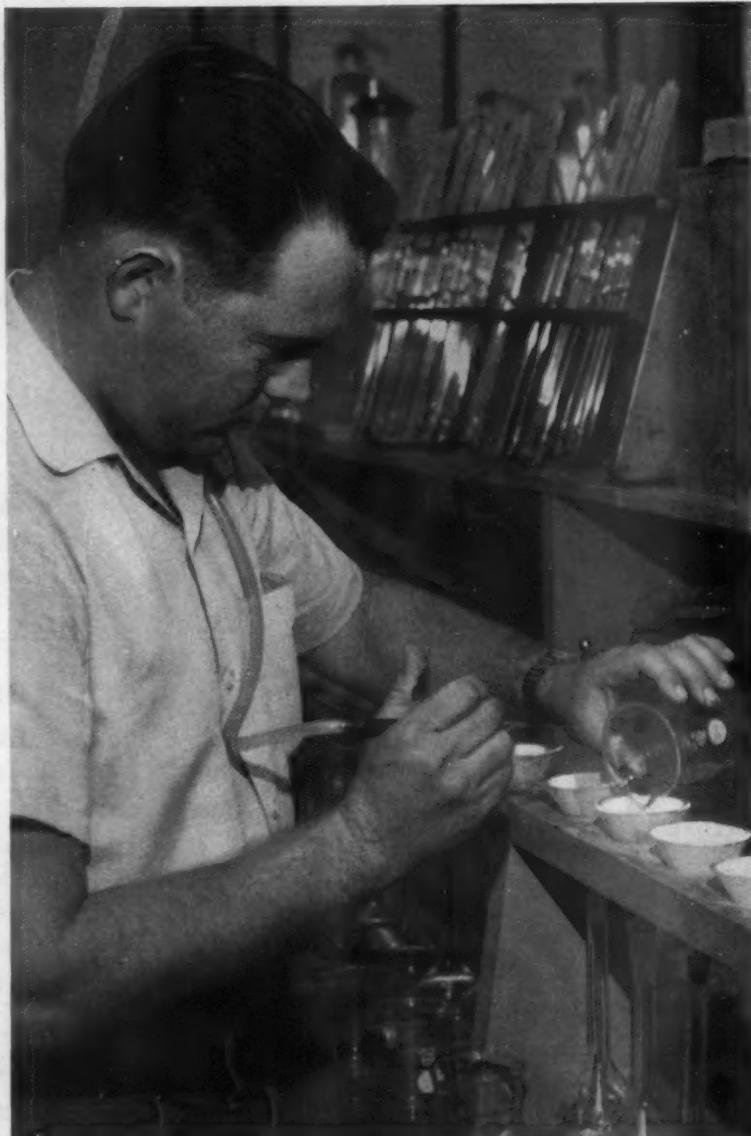
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American Cyanamid Company, Agricultural Div., N. Y. 20, N. Y. ©TREBO-PHOS is American Cyanamid Company's trademark for its triple superphosphate.



Cyanamid laboratory technician preparing samples in the quality control laboratory at Brewster, Florida.

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TO: all department heads  
FROM: L. W. Gopp, vice president

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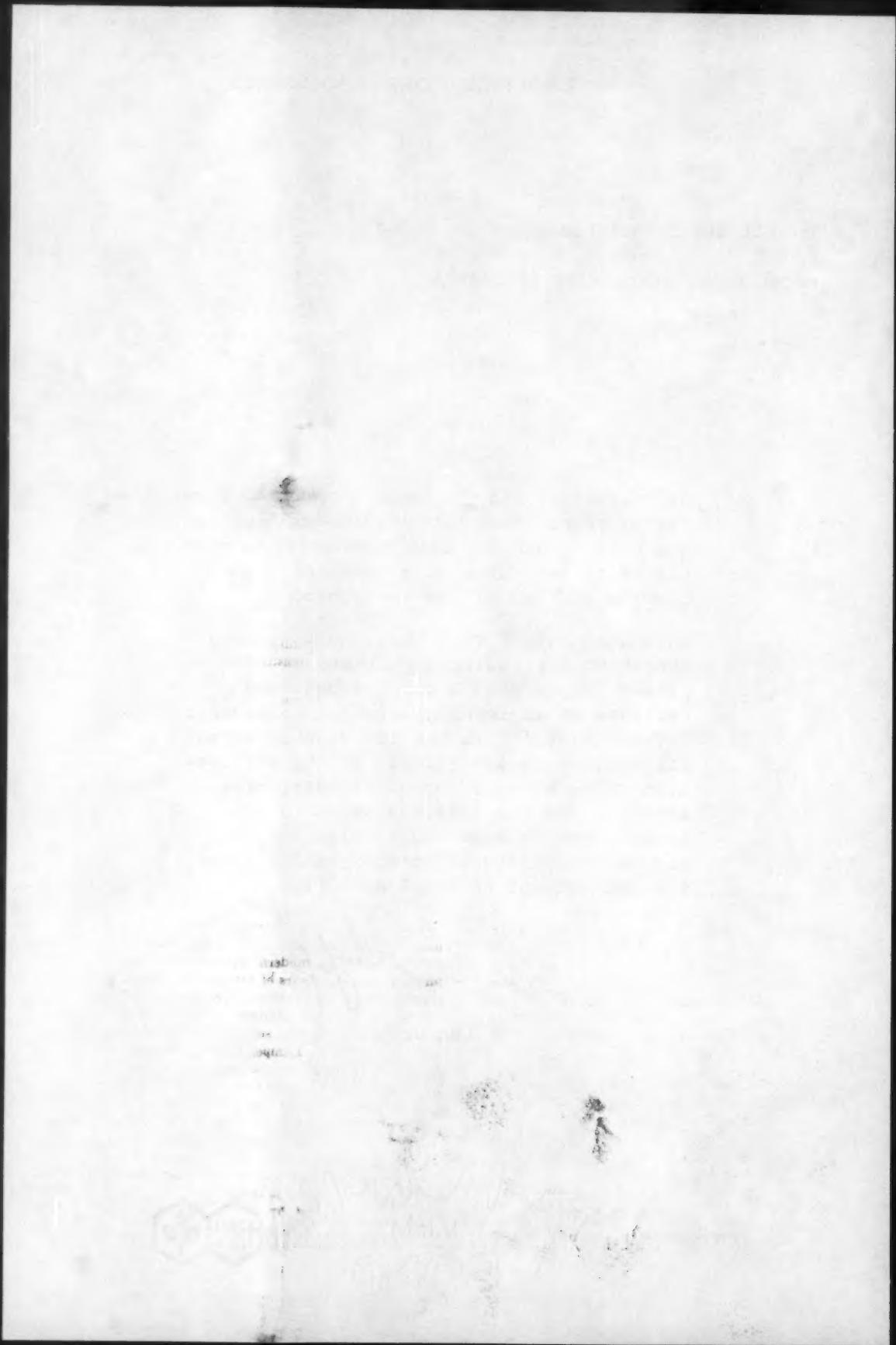
More than ever I feel that the continued growth of our business reflects confidence in our people and in our products and services by an imposing list of customers. I feel, also, it is our individual responsibility -- at every level of the corporation -- to show, in an active way, our appreciation for this business. I encourage you to continue to look for new and improved ways to extend still further the IMC concept of total service.



Len Gopp

AGRICULTURAL CHEMICALS DIVISION  
INTERNATIONAL MINERALS & CHEMICAL CORPORATION





# Many Fertilizer Production 'Firsts' Claimed by Snyder Chemical, Topeka



**T**HE SNYDER Chemical Co. of Topeka, Kansas, is not afraid of innovations. In fact, its president, Jack B. Snyder, has a number of claims on "firsts" for his part of the country regarding fertilizer production and distribution.

Starting in the fertilizer business at a time when very little plant food was applied to crops in much of the state, Mr. Snyder has seen the advancement of fertilizer use progress from practically nil to a respectable figure which is expected to go much larger as plant food education continues.

Snyder's plant in Topeka began construction in December, 1947, and was completed in April of the next year. Early products were single strength, non-granular mixed grades of fertilizer. The company experienced the usual setting-up problems of powdered mixed fertilizers and Mr. Snyder recalls having to use dynamite and other drastic means of breaking up concrete-like piles of material in storage bins.

Later, his plant took on granulation of fertilizers, to be one of the first, if not the very first plant in the U.S. to adopt this method. The company had gone through a long period of experimentation with various methods of granulating fertilizer, but with only modest success.

**H**owever, when the TVA continuous ammoniator was first developed, the company decided that this might be an ideal means of manufacturing granular products. Snyder obtained a license and thus became one of the very first to make commercial production of fertilizer via the TVA ammoniator.

"We knew what we wanted, but had not yet run across the commercial application of such a

device," Mr. Snyder recalls. He also recalls their own efforts to create a means of granulation. "We came pretty close to developing a method," he says, "but apparently failed to arrive at the right combination of heat, moisture, and other factors."

When the TVA continuous ammoniator came along, the Snyder company took out one of the early licenses in 1952 and found that the idea was precisely what it had been seeking. This also enabled the company to make a double strength granular product.

"We figured that if the farmer who had been

accustomed to using 4-16-0 fertilizer was sold 8-32-0, he would end up using a great deal more plant food simply because he had been accustomed to applying so many pounds of material, rather than calculating the actual plant food content."

Mr. Snyder points out that it appeared much easier to market a double strength product than it would have been to increase the plant food content to less than twice, or more than twice, as much as it had been previously. Most farmers, he says, were accustomed to applying "one bag to the acre," and if this policy were maintained, the sale of plant food would double.

When the Snyder company began operations some 15 years ago, there were no other fertilizer mixing plants in Kansas. Thus, the Snyder plant had the unique position of pioneering in the state. Farmers had previously used ammonium nitrate and super phosphate, which they termed "45 and 33," without regard to the meaning of the symbols.

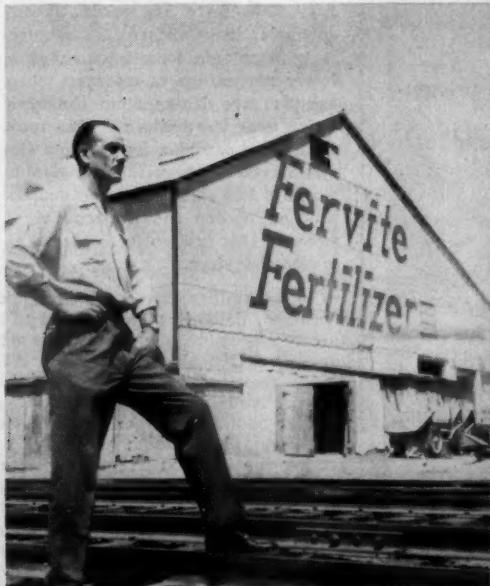
Both farmers and dealers in fertilizers needed more education, and the Snyder firm was happy to do its part in helping along this line. Efforts were made through farmer and dealer meetings to teach the economic benefits of fertilizer use and the extra value of high-analysis granular goods.

The company operates not only a plant in Topeka, but also one in Hutchinson, Kansas.

Principal owners are Jack B. Snyder, president, and Leon F. Baker, Jr., vice president. Mrs. Ruth Dixson is secretary, and Mrs. Margaret Osburn, treasurer.

John Lampe is plant superintendent of the Topeka operation.

**A**T SNYDER TOPEKA PLANT—Scenes in and around Snyder Chemical Co. offices and plant at Topeka, Kansas, reveal operation as forward-looking, modern installation. Top photo shows tank cars of nitrogen at plant's siding. Snyder manufactures granular mixed goods. Below, left to right: John Lampe, plant superintendent, surveys situation in plant's yard. Mr. Lampe, incidentally, has been in fertilizer manufacturing since 1946, having been associated first with Thurston Chemical Co., Webb City, Mo. In center photo are J. V. Williams, foreman, and Albert J. Stich, general foreman. Mr. Williams has been with Snyder about seven years, and Mr. Stich, ten. At right, management of company. Pointing to map indicating marketing area served by the Topeka operation, is Jack Snyder, president. Looking on at left is Leon F. Baker, Jr., vice president.



# Problems of Testing Spreaders Described

**FERTILIZER DELIVERED** loose in truck-load lots introduces a variety of sampling situations for the fertilizer control inspector. Experience with this method of delivery in California has been gathered over the years by field sampling of rock phosphate, by-product lime, and gypsum. Deliveries of this latter agricultural mineral now exceed one million tons per year in California. Much of it is hauled in flatbed trucks with sideboards.

A composite truck and trailer load

will carry from fifteen to twenty tons from open pit mine to farmer's field. For this agricultural mineral, and the more expensive mixed commercial fertilizers similarly shipped, the sampling method is spelled out in California regulations.\*

Due to the relatively short period between the time shipments leave the fertilizer plant and the time they are

\*Copies of these are available from the California Department of Agriculture, 1220 N Street, Sacramento 14, Cal., in Bureau of Chemistry Announcement No. FM-263.

actually applied to the soil (an hour or less) official inspections and samplings must be performed by following the bulk shipments from the blending plant to the grower's farm where the sample is drawn immediately before application. Inspectors sometimes sample trucks en route before they reach their destination.

By DeWitt Bishop

Occasionally the loose lots while being loaded at the plant are sampled, but policy has put emphasis on the inspection at the delivery site, after evidence of sale is certain.

Special mixtures of different nitrogen, phosphorus, and potash bearing ingredients raise the question of adequate representation by sampling because of the possible segregation, but samples of today's many granular or pelletized mixed fertilizers of uniform size assure a fair sample of the load. Possibly triers should be longer to assure a complete cross section of a deep bin. Some of the more common simples and grades sold in this fashion are urea, ammonium sulfate, single superphosphates, muriate of potash, 13-39-0, 16-20-0, 11-48-0, and 10-10-10.

Liquid commercial fertilizers are sold extensively in California. In 1959, 38% of the total tonnage of fertilizer applied was in liquid form. The material is generally delivered in tank trucks with capacities varying from 500 to 2,400 gallons. The fertilizer is applied by injection tractors or flowed into irrigation water. Official samples are taken before the injector tank is filled or before application has started to the water run. Samples are obtained in several ways. The hose from the tank valve is disconnected, the tank valve is drained and flushed prior to each drawing of a sample in order to clear the valve of any contaminant. Official samples are also obtained by lowering a quart sample jar into the solution from the top of the tanks if a large enough opening is present.

Aqua ammonia hydrometer field testing by the inspectors gives an on-the-spot indication of the percent of nitrogen, provided no water conditioners occur in the aqua ammonia. If conditioners have been added to aqua ammonia, a field test is not valid because the additives increase the specific gravity of the solution and give a false reading if the figures are used to calculate the nitrogen percentage.

Approximately one hundred and fifty field tests are made by inspectors in California annually. Aqua ammonia sometimes shows a lower percentage of nitrogen when samples are drawn from the tank valve near the bottom of the tank than from samples drawn from the same tank by lowering the sample jar into the solution. Some dealers do not realize the importance of keeping this fumigative material in a closed system.

Contamination can occur in liquid fertilizer deliveries when empty tanks are not adequately rinsed, flushed, and drained before the different material is pumped into the tanks. Five-hundred-gallon tanks are popular containers. These tanks have retractable legs which provide for setting the tank on irregular ground or ditch banks. Large capacity tanks on wheels called "field rigs" are also popular. These will hold from 1,500 to 5,000 gallons. Most of them are not licensed as trailers and cannot be hauled while full. They are placed empty on the farmer's property and then filled from a nurse tank through a pump system. Field rigs can be re-

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# Bulk Fertilizers in By Control Official

Program Supervisor, Field Crops and Agricultural Chemicals  
California Department of Agriculture

filled by nurse tank service repeatedly. A variety of grades of liquid mixed fertilizer is distributed in this way, but the most common liquid fertilizer is aqua ammonia.

Ammonium nitrate solution, liquid phosphoric acid, ammonia-ammonium nitrate solution, 40-0-0, in this respective order by tonnage are widely used. Several types of liquid mixed plant foods, for example 8-24-0 and 10-10-5, are distributed. Many other mixtures are sold depending on individual farmers and area preferences.

State law requires a visible label bearing required information, and this is usually attached to the truck bed or to each individual delivery bin in the case of dry fertilizer. While labeling is generally good, inspectors find some lack of attention to adequate labeling. In a series of eight samples, one inspector recalled that two lots had no labels, and one had two labels on (making it impossible to know which was correct). Labels and tags are sometimes lost from containers or bin material or tanks of liquid in regions subject to violent wind storms.

It is not unusual for an inspector to encounter several tanks of unlabeled liquid fertilizer which were labeled at the time of delivery to the grower and where further investigation indicated that a wind storm tore the tags or labels from the tanks. This problem is minimized when a metal slot is welded to the bin and a label is inserted in the slot or held in a leather certificate holder.

Inspectors have observed label tags tied with nylon twine that lasted through prevailing winds until the rectangular tag was worn round, whereas wired tags wore through the grommet and broke away overnight. Continued oral warnings, and written notices of warning in repeated label omission instances, are made to alert registrants to their labeling responsibilities.

Manufacturers and dealers would like to make more use of the bin system for dry fertilizers, but to date inspectors report difficulty in some cases in transferring the fertilizer from truck bin to hoppers mounted on tractors for side dressing. The transfer to hoppers is no problem when the position of the two permits a gravity flow.

Farmers have some objections to bulk bins with lift equipment, since any breakdown of the one cylinder motor that powers the lift auger can disrupt the work. Farmers who use smaller amounts of fertilizer say they find the bins too large. They object to the time spent to return bins. Truck farmers who irrigate by furrow have used empty fertilizer bags as temporary ditch dams. When they buy in bins, they miss the empty bags and have the additional expense of buying material to substitute for the bags no longer available.

A few large growers have their own bins, but usually dealers supply them. Considerable tonnage of commercial fertilizer is sold in loose lots in areas where there are large farming operations which lend themselves to volume usage. Growers sometimes wonder if they are getting the weight and content

so because of their heavy indebtedness to a contract-seller.

It is interesting to note that of the four counties in California which account for 37% of the tonnage used, that one of them uses more of its fertilizer in bags than bins; although some ammonium nitrate and ammonium sulfate and 16-20-0 is delivered in bulk bins. Single superphosphate is delivered and spread by spreader trucks with end gate delivery.

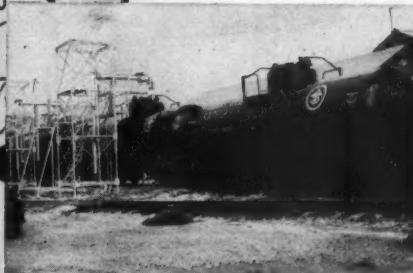
California has noted no differences

in the percentage of deficient fertilizers shipped in bins or tanks as compared to that in bags or barrels. In 1960, inspectors took 2,886 samples of fertilizer delivered in all types of containers including sacked products, and of this number 339 or 11.74% were deficient. Sampling methods sometimes have to be adapted to facilities for entering unusual containers, but there has been no problem in solving difficulties by mutual discussion of manufacturers or shippers.



## molten sulphur

### SHORT HAULS—PROMPT DELIVERIES



Beaumont, Texas is the shipping point for practically all the TGS tonnage of molten sulphur sent to the eastern half of the United States. BUT instead of waiting for deliveries measured in days TGS customers can rely upon these four regional terminals and get their supplies in much faster time.

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Tampa, Florida

Carteret, New Jersey

At each of these terminals, we maintain inventories of thousands of tons of molten sulphur, ready for prompt deliveries by tank car and tank truck. It would be an unusual demand that would necessitate time-consuming 'Beaumont to customer' delivery.

This is service with a capital S. These terminals are part of a steadily expanding TGS program of shortening Sulphur supply lines.



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# Off-the-Job Safety Program in Plant Heralded as Important to Management

MOST COMPANIES in the fertilizer and pesticide manufacturing fields make every effort to cut down accidents in the plant in order to spare employees needless pain and loss of work time, as well as to increase production efficiency. But while doing this, management should not overlook the additional cost of off-the-job accidents, the National Safety Council states.

Actually, employees are usually safer on the job than off, because of the efforts of plant management to match the person to the job, training programs, protective equipment on

machines, and safe procedures in handling machines and tools in the plant.

At home, however, the plant employee becomes an amateur electrician, a house painter, carpenter, and tree trimmer, using unsuitable and frequently unsafe equipment for the jobs and running the risk of becoming injured. But do these at home hazards affect the operations of the plant?

The answer is affirmative. Off-the-job accidents do have an expensive effect on the company for which the

victim works. These costs are both direct and indirect. Consider:

Absenteeism is an obvious result—a problem that plagues industry because it leads to higher costs and lower production through loss of skilled and experienced manpower.

**It is a matter of simple arithmetic that off-the-job accidents increase the cost of doing business. For insured companies, insured costs include the premiums for those portions of health and accident policies applicable to off-the-job accidents. For self-insured com-**

panies, "insured" costs include the amount of claims paid for medical and hospital expenses, plus the cost of administering the programs. The wage costs for injured employees are estimated to total as high as \$350,000,000 a year.

A much more overwhelming cost figure results when some of the easily obtainable additional costs of off-the-job accidents are added to the above wage costs.

One substantial item is the cost of wages paid for time which is either completely nonproductive or results in production below an acceptable standard. Included here are wages paid to workers while their output following an injury is still low. If replacement workers must be hired, personnel department costs, wages paid to supervisors for time spent in training the new people, and wages paid to the replacement workers during the break-in period must be figured. The cost of tools damaged and batches spoiled by new and inexpert workers must also not be overlooked.

Finally, wages paid to noninjured employees must be added for time spent in visiting injured workers or attending funerals or whose work was delayed because an injured worker was a member of a team, because his output was needed, or because they just stood around talking about his accident.

Higher rates for automobile, fire, and public liability insurance, as well as for medical and hospital insurance, can be regarded, at least in part, as additional costs resulting from off-the-job accidents. So also can nursing and medical expenses during the period of rehabilitation, even though these expenses may be absorbed by the company's medical department.

To sum up in terms of dollars, the additional costs of off-the-job accidents are estimated to be \$200,000,000 annually. (These costs cover both injuries which cause lost time and those which do not.) This figure, added to the \$350,000,000 estimated for wage costs for injured employees, gives a grand total of \$550,000,000 in off-the-job accident costs to employers each year.

In addition to dollar costs, industry pays for off-the-job accidents in other ways. Consider the case of the foreman whose car collides with a truck when he tries to pass on a curve. His workers look to him for quick decisions, sound judgment and accurate pacing of the work. Because he is laid up, the team must operate under less competent leadership. Production falls off enough to make the department miss its quota and perhaps be unable to fill a large rush order and thereby lose a contract.

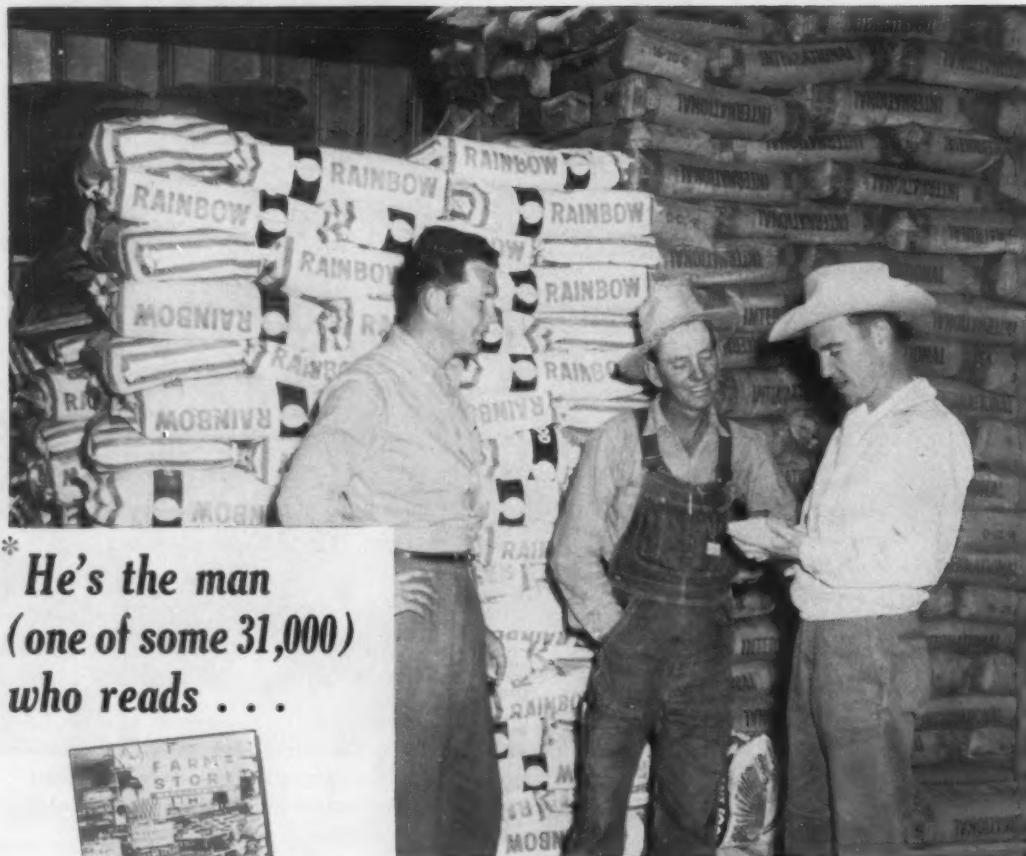
The cost of off-the-job accidents appears to be an eloquent reason why plant management can afford a little more attention to programs for stressing safety beyond working hours. The Safety Council points out that the expense of operating an off-the-job safety program can be justified by the fact that the firm is being operated for profit. "An aggressive management does not hesitate to hire the best-trained personnel, to buy machines of the finest quality, to earmark liberal amounts for advertising, with the aim of increasing profits," it says.

"By the same line of reasoning, an off-the-job safety program can be considered as a means of increasing profits. Accident-free employees will be at work more of the time, and they will be more efficient. There will be less spoilage, less damage to tools and machines, and higher rates of production.

"An active off-the-job program can help build good employee relations. It is substantial evidence that the company believes in the dignity and worth of each employee. It provides an opportunity for the company to

Turn to OFF-JOB SAFETY page 35

## THE MAN \* THE FARMER TALKS TO JUST BEFORE THE SALE!



\* He's the man  
(one of some 31,000)  
who reads . . .



**the first and only publication edited  
exclusively for the farm supply dealer**

He's the man the farmer talks and listens to just before the sale. Based on a survey of FSM readers, more than 22,000 sell (and talk about) fertilizer—96.2% sell dry bagged fertilizer, 32.5% sell dry bulk and do some blending, 16.6% sell liquid fertilizer and some of them do their own blending, too.

As reported by rural sociologists, G. M. Beal and J. M. Bohlen of Iowa State University, "Research evidence points up the important role that the fertilizer dealer plays in the farmer's decision-making progress regarding fertilizer use. For instance, 96% of the farmers expect the fertilizer dealer to be a reliable source of information about fertilizer use . . . 52% of the farmers stated that they buy their present brand of fertilizer 'because my dealer handles it.'"

In planning your advertising, don't overlook the most important link in the farm marketing chain, the farm supply dealer. Contact the nearest FSM office for your free copy of "Fertilizer Sales in Farm Supply Stores."

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**BPA**

# WHAT ARE DRI-SOL<sup>®</sup> BENEFITS IN MIXED-FERTILIZER PRODUCTION?

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**BETTER PROCESS CONTROL**

**LOWER FORMULATION COSTS**

**LOWER DRYING COSTS**

**A DRIER PRODUCT**

**INCREASED PLANT CAPACITY**

**FASTER CURING—QUICKER SHIPMENT**

**IMPROVED FERTILIZER QUALITY**



More and more fertilizer manufacturers are turning to DRI-SOL ammoniating solutions as a sure, time-tested way to lower production costs and improve mixed-fertilizer quality.

For in addition to the eight cost-saving and quality-building advantages shown above, DRI-SOL can also help manufacturers offset the high water content of low-strength acid. It also helps to produce grades which are

difficult or impossible to make with conventional solutions.

*What grade of DRI-SOL meets your needs best?* From a wide choice of formulations you can select the solution that offers you the greatest number of advantages. Each grade contains less than 0.5% water. Grades range from 24% ammonia and 76% ammonium nitrate, to 50% ammonia and 50% ammonium

nitrate, and are generally available in all the Southern and Midwestern States.

Why not get complete information? Technical data to fertilizer manufacturers available upon request. Write: Agricultural Chemicals Department, Commercial Solvents Corporation, 260 Madison Avenue, New York 16, New York. Offices also located in: Atlanta, Shreveport, St. Louis.

**COMMERCIAL SOLVENTS CORPORATION**



## Chemagro Controls Odors, Stops Neighbors' Complaints

KANSAS CITY, MO.—Chemagro Corp. has been practically cleared of complaints by neighbors and the Kansas City council of alleged odors emanating from the pesticide plant on the far outskirts of the city. Investigations by the city chemist as well as a recent investigation by Dr. Amos Turk of the Midwest Research Institute, indicated that the plant odors are not of sufficient intensity to constitute a nuisance. Efforts made by Chemagro to check fumes and odor have been basically successful, Dr. Turk's report said.

Long-running discussions with the Kansas City council were based on complaints from neighbors residing in the area of the plant. Testimony was heard from council members, the city's Chamber of Commerce, and by chemists who had studied the situation.

At one recent session, the Kansas City council voted unanimously on the motion of one member to "take steps to attempt to abate the odor emanating from this industrial plant, and if the gentlemen in charge of the plant are not willing to do that, to take the legal steps necessary for them to quit using this nauseous gas."

### Surfactants Used With Herbicides May Exert Changes in Product Performance

**T**HAT MINOR changes in the chemical structure or concentration of surfactants may influence the action of herbicidal sprays to a considerable extent in the conclusion reached in studies by L. L. Jansen and W. C. Shaw of the Agricultural Research Administration, U.S. Department of Agriculture.

A single surfactant may increase, decrease, or not affect the action of herbicides, the study shows. For example, one surfactant, an alkyl-phenol ethylene oxide condensate was used in a series of herbicidal sprays applied to corn as test plants. The agent increased the killing action of dalapon sevenfold and trebled amitrole activity, but did not affect 2,4-D and DNBP.

On soybeans, the same surfactant doubled the action of dalapon and amitrole, and trebled the action of 2,4-D and DNBP.

In these experiments, sublethal amounts of herbicides were applied to plants so the comparative effects of surfactants could be measured. This research is continuing at the USDA Agricultural Research Center, Beltsville, Md.

Soaps, detergents, and shampoos are commonly used surfactants. In agriculture, similar compounds are used as sticking, spreading, and wetting agents.

Why do surfactants have such effects on herbicides? Scientists don't know all the answers. But they do know that when surfactants are used at concentrations which have the most influence on a herbicide's activity, there are few changes in sticking, spreading, or wetting abilities.

Slight changes in the chemical structure of a surfactant, however, greatly influence the properties the agent imparts to solutions. Changes occur, for instance, in the solution's ability to conduct electricity and in the relative degree of colloid aggregation (clumping of dispersed, but undissolved substances). Further research is needed to explore the significance of these changes on herbicidal action, the researchers say.

The effectiveness of surfactants used with weed killers varies, depending on the type and amount of surfactant and herbicide, and the plant the spray mixture is applied to.

The scientists say an increase in the amount of surfactant used in a spray may significantly alter the weed killer's effectiveness. At a concentration of one-hundredth of 1%, a surfactant usually doesn't increase herbicidal activity. But at one-tenth of 1%, the agent might depress activity; at 1%, it may significantly enhance activity.

More than 100 surfactants have been studied for their effects on herbicides. Although a few of the agents are slightly toxic to plants, most are normally harmless to plants and animals.

The scientists believe surfactants might be used with weed killers to fit specific crop-weed situations. For instance, an agent mixed with 2,4-D sharply increased the herbicide's activity on mustard without increasing its toxicity to corn plants and other grasses.

Improper use of a surfactant, however, could destroy a herbicide's selective action, increase injury to desirable plants, or decrease toxicity to weeds. So surfactants should not be added to weed killers without knowing their effects on the herbicides used, the researchers cautioned.

Continuing studies are expected to uncover specific information that will indicate specialized uses for surfactant-herbicide combinations for selective weed control in crops, USDA says. It adds that this surfactant research has many implications. "If a smaller amount of herbicide with a surfactant controls weeds as efficiently as a greater amount without the surfactant, it may permit lower cost weed control, and herbicide residue hazards might be greatly reduced. Or surfactants might add to a weed killer's effectiveness in combating weeds unusually difficult to control, without increasing toxic residues on desirable plants," the report concludes.

All the councilmen and the mayor voted for the motion.

The Chamber of Commerce, taking a more realistic view of the situation, pointed out to the council that the accusations with which Chemagro had been faced, appeared to be without much basis. They pointed out that a study made a few months ago by the city's own chemist, E. M. Mockobey, indicated that the level of odor in the area was not bad enough to be termed a nuisance, and furthermore, most of the complaints were made by just one person.

The report of the city chemist said, "Odor levels did not appear to be high enough to constitute a nuisance."

"While the Chemagro Corporation could be a factor as far as odors are concerned, its influence at this time seems to be no greater than that of numerous other plants, etc., in the area.

"Odor intensities seem to be considerably less this year (late 1960) than last. Also, current odors are different than those of last year. Based on these facts, it would ap-

### WHY NOT CONTROL MOSQUITOES?

CLEMSON, S.C.—Sleeping sickness, a disease believed to be spread by mosquitoes, and often fatal to the horse, pony and mule population, is on the increase again, according to Dr. S. L. Moore, assistant state veterinarian at Clemson College.

In a recent warning the American Foundation for Animal Health urged farmers and owners of horse or pony stables to keep on the alert for increased outbreaks as summer approaches.

In areas where sleeping sickness has been a problem before, Dr. Moore suggests that owners have their animals vaccinated before the mosquito season arrives.

Reports indicate that the situation has become so serious in some areas that one state now requires annual vaccination of all horses, and authorities in a number of other states are watching it closely.

pear the odor-preventing equipment installed by the Chemagro Corporation about September, 1959, was quite effective.

About 78% of the complaints originated at the same location, and while the list does not so indicate, were with two exceptions made by the same person.

"Practically all complaints were directed against Chemagro, with particular reference to the manufacture of the leaf defoliant.

"Manufacture of this product was stopped September 7 (1960). A very significant fact is that 72% of the complaints were received after this date."

The chemist's report suggested other sources of odor and gases in the general area, which might also be contributors.

Dr. Robert S. Scott, vice president for manufacturing at Chemagro, reported that the company had spent about \$65,000 to combat odor problems. He told the council that aside from fairly regular calls from a single area, the company had received only three or four complaints since last November.

The Chemagro firm occupies a large plant in a remote northeast section of the city near the Missouri River, adjacent to a power and light company plant. Production began at the plant in 1958 and, since that time, the firm has continued to expand. Chemagro currently has under way an addition representing an investment of some \$500,000. The company has also considered doubling its 25-acre site for further expansion.

The Kansas City firm is owned by Farbenfabriken Bayer of Leverkusen, West Germany, and Pittsburgh Coke & Chemical Co. Approximately 300 persons are employed by Chemagro. Officials of the company made it clear

to Kansas City councilmen that to stop the alleged odor would mean a curtailment of production and a reduction of the payroll.

Herbert F. Tomasek is president of Chemagro; Dr. Rosemarie Von Rumker, vice president for research and development; Charles V. Jones, treasurer; Allen R. Bennett, assistant treasurer; and Robert W. Dammann, secretary.

### Crag Reassigns Four

NEW YORK—Four new field assignments and two more appointments to the Crag agricultural chemicals staff have been announced by Union Carbide Chemicals Co., division of Union Carbide Corp.

Expansion of the sales force is to keep pace with demands for new Sevin insecticide in cotton, fruit and vegetable growing areas, the company said.

Richard B. Baughman and J. Charles Blue have been transferred from company headquarters at New York City to the Southern region where they are under supervision of J. R. Wheatley, regional manager, Memphis.

Daniel J. Leary has been moved from New York City to the Southwestern region, under supervision of C. D. Fischer, regional manager, Tucson, Ariz. Mr. Leary covers West Texas out of Lubbock.

J. W. Durfee has been transferred from New York City to Penfield, N.Y., where he is supervised by T. P. Finn, Eastern regional manager, Grand Rapids, Mich.

L. E. Roll and B. F. Clay have been appointed to the agricultural chemicals staff, and will undergo a period of technical and sales training at company headquarters in New York City.

### More Nitrogen Solutions Added to List

WASHINGTON—Dr. J. Richard Adams, Agricultural Research Service, U.S. Department of Agriculture, author of a report article (CropLife, May, 1961, page 1) on fertilizer solutions in 1960, states that additional information has developed on nitrogen solutions containing only 0.5% water.

He suggested that Croplife publish the additional figures for the benefit of readers who wish to make their files on the subject more complete. The addendum is presented in the accompanying table. Eleven additional nitrogen solutions are listed. These, according to Dr. Adams, are presently available on the market.

TABLE 1

Suggested nomenclature	Specific gravity at 60° F.	Vapor pressure psig @ 104°	Salting-out temperature
462 (24-76-0)	1.162	25	19
466 (25-75-0)	1.150	29	5
480 (28-72-0)	1.115	37	<-30
490 (30-70-0)	1.094	44	<-30
509 (34-66-0)	1.055	57	<-30
528 (38-62-0)	1.020	70	<-30
537 (40-60-0)	1.004	78	<-30
547 (42-58-0)	0.989	86	<-30
556 (44-56-0)	0.974	95	<-30
566 (46-54-0)	0.958	104	<-30
575 (48-52-0)	0.944	121	<-30

## We're name dropping but . . .

**Big Chief Kay-Two-Oh** is only trying to impress you with the fact that all sizes of our 60% Muriate of Potash, by ANY name, are the best bet for your manufacturing operations.

At a recent pow-wow, a special committee of the National Plant Food Institute suggested that distress smoke signals from buyers indicate (ugh!) confusion caused by different names for similar products. To bring orders out of chaos (Indian-type pun), we're happy to go along with the rest of the industry in standardizing our nomenclature (paleface-type word meaning "names").

PCA Standard (the little one), remains PCA Standard. But henceforward, as of the new season, July 1st, PCA Special Granular (the middle one) will be known as PCA Coarse, and PCA Coarse Granular (the big one) will be known as PCA Granular.

So at last we've answered the question: What's in a name? Convenience for you in ordering from any source. But for top quality potash, and top service, be sure to order from PCA, top man on the totem pole.



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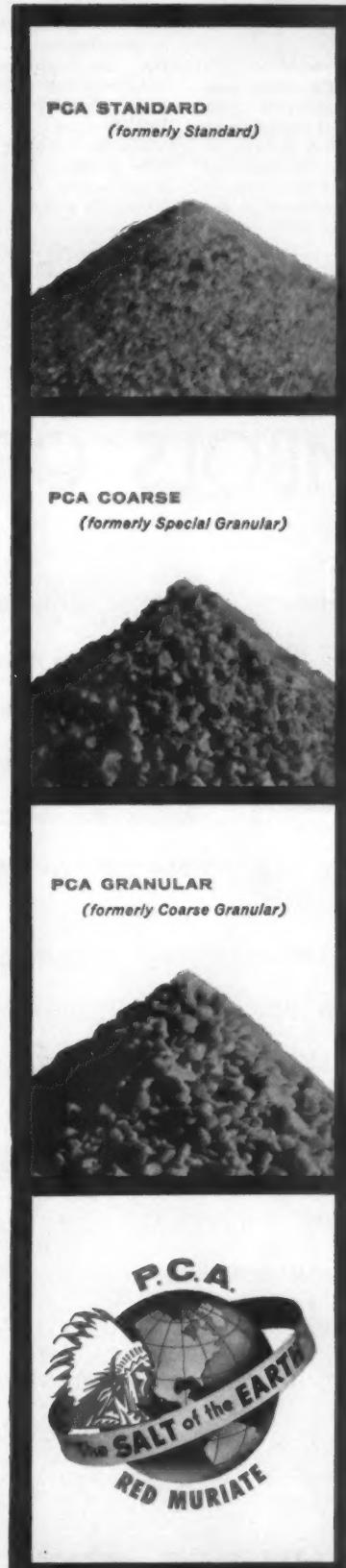
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Midwestern Sales Office:  
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Southern Sales Office:  
1776 Peachtree Building, N.E., Atlanta, Ga.

Canadian Sales Office:  
2 Carlton Street, Toronto 2, Ontario

Phone, Write, Telex  
or Wire Our General Offices  
in New York:  
Phone LT 1-1240, New York  
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**NEW SAMPLING TUBE**—How new type sampling tube operates with freedom from clogging is indicated in the demonstration above. Design of the tube is patented by International Minerals & Chemical Corp., but license for manufacture and use is being made available by IMC on a royalty-free basis.

### Free License Available For Manufacture of New Sampling Tube

SKOKIE, ILL.—International Minerals & Chemical Corp. has announced the availability of a royalty-free license for the manufacture and use of an improved fertilizer sampling tube which it patented earlier this year.

The new tube has been designed to overcome clogging in operation. In addition, the sample receiving slot has been widened to receive the proper proportion of all particles, including the larger particles. IMC researchers say it has proven particularly effective with granular fertilizer material.

Simple in design and operation, the tube is also relatively inexpensive to manufacture. IMC states it is making its patent available free "in the interest of more accurate analyses of granular fertilizer samples."

### Texas Firm Plans to Manufacture Mixed Fertilizer Product Derived from Coal

DALLAS, TEXAS—American Humates, Inc. of Dallas, has announced plans for construction of a new plant for the production of fertilizer derived from coal. The plant will be constructed on a 137-acre site east of Glenrock, Wyo., with completion scheduled for late fall. The basic raw material will be coal strip mined from company leases north of Glenrock, and transported by truck to the processing plant.

American Humates, Inc., is owned primarily by Dr. J. C. Karcher, John Mills and Neely Landrum, all of Dallas.

Dr. Karcher, a geophysicist and chemist, is president of American Humates, president of Concho Petroleum Co. of Dallas, and also has been a director in the Republic National Bank of Dallas for many years.

Mr. Mills and Mr. Landrum are associated in a number of business enterprises.

Chief engineer for the company is Charles Canfield of Dallas and chief agronomist is George W. Otey of San Antonio. Regional representative is Eugene Stevens of Casper.

Dr. Karcher now holds leases or prospecting permits on 6,119 acres located 22 to 30 miles north of Glenrock, which will be assigned to the company. Holdings include three federal leases totaling 4,359 acres, one federal permit on 1,120 acres and one state lease on 640 acres.

Approximately 175 test holes have been drilled through the coal bearing strata and additional test drilling is contemplated. Sufficient coal is believed to be available, according to preliminary surveys, to furnish raw materials for many years of plant operation. The exact number of tons per day of final product output has not yet been established.

A pilot plant has been in operation in Dallas for some months and many problems of mechanical and chemical engineering are reported to have been solved. Experimental work on plant growth, using the new fertilizer, has been conducted at Texas A&M College. In addition, final product from the pilot plant has been placed with individuals and organizations for test purposes.

Organic derivatives to be used in the final product include humic acids, fulvic acids and other polycarboxylic acids, Dr. Karcher says. He adds that trace elements necessary for plant growth are also present.

One of the standard finished products will be a 16-8-4, plus 36% humic acid. Dr. Karcher reports. The humic acids, he says, are the main constituents in rebuilding soil fertility.

### IMC Product Line to Add Diammonium Phosphate

SKOKIE, ILL.—International Minerals & Chemical Corp. has announced that it will add diammonium phosphate to its line of fertilizer ingredients late this year.

The corporation will invest \$3.8 million in an expansion project at its Bonnie, Fla., phosphate chemicals plant to manufacture 100,000 tons a year of the new nitrogenous product, according to T. M. Ware, IMC president. Completion is scheduled by Oct. 31.

The new product will contain 18% nitrogen and 46% P<sub>2</sub>O<sub>5</sub>. Currently produced at Bonnie are triple superphosphate, superphosphate, phosphoric acid, feed phosphates and sulphuric acid.

Mr. Ware said demand for the recently developed high-analysis diammonium phosphate is growing rapidly, especially in the Midwest. He said addition of the product to IMC's list of fertilizer materials would enhance the full line advantages IMC now offers its customers.

### W. R. Grace Announces Price Advances for Urea

NEW YORK—W. R. Grace & Co. will raise urea prices as of July 1, William J. Haude, president of the company's Nitrogen Products Division has announced to the trade. The increase will be from \$2 to \$3 a ton.

All urea, produced at Memphis, Tenn., by the Nitrogen Products Division, will be priced on a delivered basis after July 1 to customers in all states east of and including New Mexico, Colorado, Wyoming and Montana, Mr. Haude said. He added that industry prices on urea had been depressed for some time and the Nitrogen Products Division felt obligated to raise its prices now to insure a fair return on business.

## SYMBOLS OF PLANT LIFE



**I**n medieval times, the "black art" of alchemy was condemned by superstitious authorities hardly less ignorant of chemistry than the masses. To avoid persecution . . . and possible execution . . . for witchcraft, alchemists invented secret symbols for use in their experiments with potash and other basic elements.

**TODAY, EXPERIMENTS ARE STILL BEING MADE WITH POTASH . . . BUT NOW NO SECRETS SURROUND ITS IMPORTANCE IN AGRICULTURE.**

**FOR THE PRODUCTION OF QUALITY FERTILIZERS, SOUTHWEST POTASH CORPORATION SUPPLIES MIXERS WITH DEPENDABLE HIGH-K® MURIATE—IN STANDARD, COARSE AND GRANULAR GRADES.**



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# Arcadian® News

Volume 6

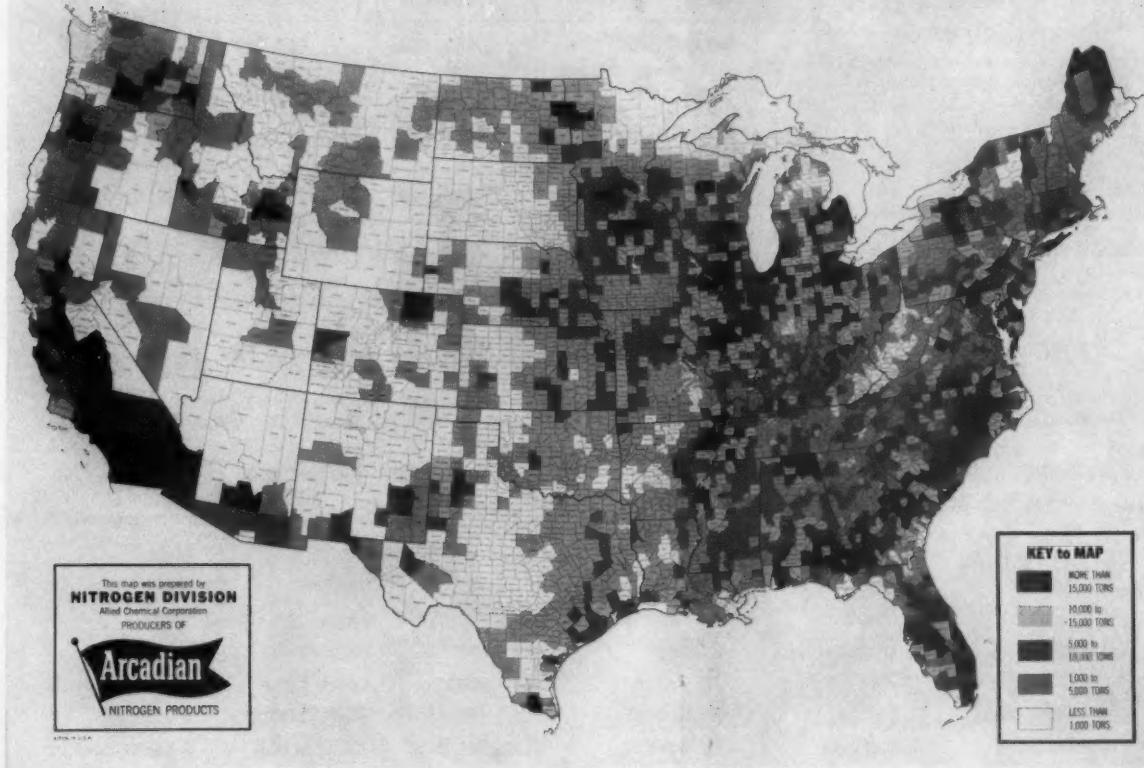
Nitrogen Division, Allied Chemical Corporation

Number 6

## Get This Map FREE!

### USE OF COMMERCIAL FERTILIZERS BY FARMERS

Based on county data compiled by Nitrogen Division, Allied Chemical Corporation, from U. S. Census of Agriculture, 1959.



This is a miniature reproduction of a big map, 28 inches long and 21 inches deep, lithographed in five colors, which you can obtain without charge from the ARCADIAN News. Just use the coupon on the next page. Based on 1959 U. S. Census of Agriculture figures, this

map shows the relative importance of each county in 48 states as a market for commercial fertilizers. On the map, counties that use more than 15,000 tons of commercial fertilizers are shown in red; 10,000 to 15,000 tons, in

(continued on next page)

## Arcadian News for Fertilizer Manufacturers from Nitrogen Division, Allied Chemical

(continued from preceding page)

yellow; 5,000 to 10,000 tons, in green; 1,000 to 5,000 tons, in blue; less than 1,000 tons, in white. This map is ideal for quick reference. It shows you, at a glance, the exact location of the best fertilizer markets. You will use it many times in many ways. Only a limited number of these maps are available. To obtain your free copy, we suggest that you fill out and mail the coupon below today!

### State Tables Also Available

In addition to the map, ARCADIAN News has also prepared an individual state table for each of 48 states, similar to those shown at right for Illinois and Indiana. Based on census figures, these tables give the following data for each state:

- Total farms in state.
- Farms using fertilizer.
- Total tons of fertilizer.

Each table also gives the following data for each major crop grown in the particular state:

- Acres fertilized.
- Tons dry material used.
- Tons liquid material used.

You can obtain individual state tables containing all of this information for the states in which you are interested, simply by mailing the coupon below. There will be a big demand for these tables and supplies are limited. We therefore suggest that you mail your coupon today. ARCADIAN News has compiled and reproduced this information as a service to the fertilizer industry and there is no charge for this service.

## ILLINOIS

TOTAL FARMS IN STATE . . . . . 154,640  
 FARMS USING FERTILIZER . . . . . 107,632  
 TOTAL TONS OF FERTILIZER . . . . . 1,219,329

CROP	Acres Fertilized	Tons Dry Material	Tons Liquid Material
CORN	6,483,003	677,542	143,481
WHEAT	1,255,233	147,045	15,171
SOYBEANS	489,998	55,984	1,754
HAY & CROPLAND PASTURE	318,789	76,013	2,156
All Other Crops Including Non-Cropland Pasture	532,075	97,262	2,921
<b>TOTAL ALL CROPS</b>	<b>9,079,098</b>	<b>1,053,846</b>	<b>165,483</b>

## INDIANA

TOTAL FARMS IN STATE . . . . . 128,160  
 FARMS USING FERTILIZER . . . . . 102,416  
 TOTAL TONS OF FERTILIZER . . . . . 1,005,600

CROP	Acres Fertilized	Tons Dry Material	Tons Liquid Material
CORN	4,839,631	581,559	58,415
WHEAT	1,163,838	140,987	6,182
SOYBEANS	823,685	63,284	1,437
HAY & CROPLAND PASTURE	302,942	40,451	1,284
All Other Crops Including Non-Cropland Pasture	890,769	108,103	3,898
<b>TOTAL ALL CROPS</b>	<b>8,020,865</b>	<b>934,384</b>	<b>71,216</b>

### CLIP and MAIL this COUPON to get your map and tables promptly!

ARCADIAN News, Nitrogen Division, Allied Chemical Corporation, 40 Rector St., New York 6, N. Y.

Without charge, send me the big 5-color map showing use of fertilizers in every county of 48 states. Also send me fertilizer data tables for the states I have checked below.

<input type="checkbox"/> Alabama	<input type="checkbox"/> Georgia	<input type="checkbox"/> Maine	<input type="checkbox"/> Nebraska	<input type="checkbox"/> Ohio	<input type="checkbox"/> Texas
<input type="checkbox"/> Arizona	<input type="checkbox"/> Idaho	<input type="checkbox"/> Maryland	<input type="checkbox"/> Nevada	<input type="checkbox"/> Oklahoma	<input type="checkbox"/> Utah
<input type="checkbox"/> Arkansas	<input type="checkbox"/> Illinois	<input type="checkbox"/> Massachusetts	<input type="checkbox"/> New Hampshire	<input type="checkbox"/> Oregon	<input type="checkbox"/> Vermont
<input type="checkbox"/> California	<input type="checkbox"/> Indiana	<input type="checkbox"/> Michigan	<input type="checkbox"/> New Jersey	<input type="checkbox"/> Pennsylvania	<input type="checkbox"/> Virginia
<input type="checkbox"/> Colorado	<input type="checkbox"/> Iowa	<input type="checkbox"/> Minnesota	<input type="checkbox"/> New Mexico	<input type="checkbox"/> Rhode Island	<input type="checkbox"/> Washington
<input type="checkbox"/> Connecticut	<input type="checkbox"/> Kansas	<input type="checkbox"/> Mississippi	<input type="checkbox"/> New York	<input type="checkbox"/> South Carolina	<input type="checkbox"/> Wisconsin
<input type="checkbox"/> Delaware	<input type="checkbox"/> Kentucky	<input type="checkbox"/> Missouri	<input type="checkbox"/> North Carolina	<input type="checkbox"/> South Dakota	<input type="checkbox"/> Wyoming
<input type="checkbox"/> Florida	<input type="checkbox"/> Louisiana	<input type="checkbox"/> Montana	<input type="checkbox"/> North Dakota	<input type="checkbox"/> Tennessee	<input type="checkbox"/> West Virginia

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Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_

# Precautions for Handling Solutions in Hot Weather

**Fertilizer plant operators** who ignore the effect of heat on the physical properties of ammoniating solutions are liable to be in "hot water" in hot weather. The most efficient operators keep one eye on vapor pressure curves and the other eye on the thermometer, so they can handle nitrogen solutions properly when the temperature goes up.

In the summer, the vapor pressure of solutions is a matter of serious concern from the moment of arrival of the tank car at the plant until the ammonia in the solutions has been neutralized by superphosphate or acid in the mixer.

## Two Pressures

Two pressures are involved in hot weather handling—the vapor pressure of the solution and the air pressure that is required to move the solution through the equipment. Both of these pressures tend to increase in warm weather, and all equipment must be able to withstand the extra pressure. Gauges and safety devices must be in good working condition. The hose from the tank car should be securely connected to ample fittings with heavy metal clamps having four large bolts each. (Make certain that all pressure is released before disconnecting hose. This is particularly important when quick-acting couplings are used.)

## Importance of Air Pressure

Most vapor-pressure, warm-weather problems can be overcome by maintaining enough air pressure to keep the ammonia in solution at all points in the system where gas formation can cause

trouble. Always keep the air pressure higher than the vapor pressure.

## In the Tank Car

Insufficient air pressure in the tank car can permit the rush of enough ammonia gas through the hose to make the operator believe that the car is empty. If there is much back-pressure from hot storage tanks, measuring tanks or pipelines, it may be impossible to move any nitrogen solution from the car until the back-pressure is relieved or the pressure in the car is built up with air. Incidentally, pressure cannot be gauged accurately at any point while a fluid is moving rapidly past that point in the system.

## At the Pump

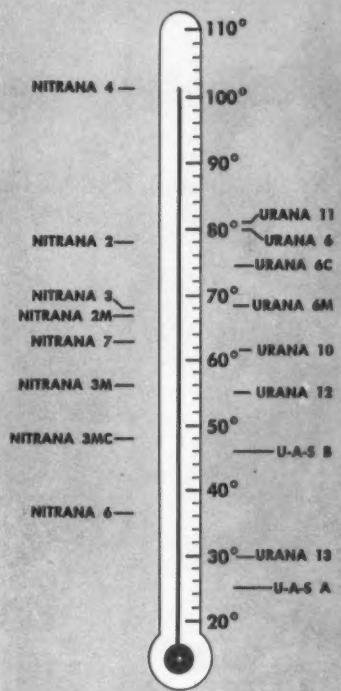
At the suction side of the pump, where the relative vacuum has the same power as increased temperature to release ammonia gas, even a small amount of gas will vapor-lock almost any pump. Leakage of air into the suction line will also vapor-lock pumps. Centrifugal pumps can often be made to function by throttling down the discharge volume from the pump enough to reduce the pull on the suction side. But this procedure is of little help in positive-displacement pumps, such as gear and piston pumps, since they deliver about equal volumes of liquid at all discharge pressures. Furthermore, these pumps may be damaged by excessive pressures.

Trouble at the pump is sometimes caused by hot suction lines. These lines may be cooled with water, or cooled by allowing some ammonia to vaporize

## APPROXIMATE BOILING POINTS DEGREE FAHRENHEIT

### ARCADIAN AMMONIATING SOLUTIONS

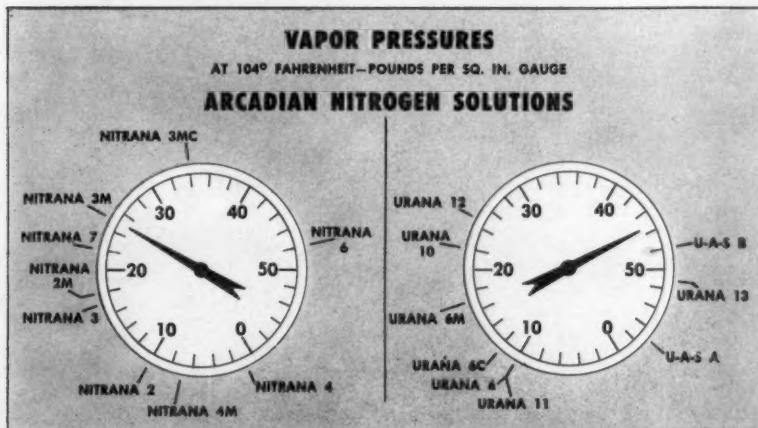
AT 0 LBS. GAUGE PRESSURE  
(ATMOSPHERE PRESSURE)



through the stopped or slowly turning pump so as to refrigerate the metal. White or aluminum paint on piping and tanks reflects the sun's rays to reduce heating.

## At the Volume Meter

In volumetric meters and measuring tanks, the solution will weigh less per gallon if it develops many bubbles due to low pressure. The bubbles can be so microscopic that they escape attention. Sometimes the bubbles are moving actively enough to make it impossible to read the level of the solution in gauge glasses or glass rotameter tubes. Adequate air pressure will correct this condition. Even when ammoniating solutions are in 100 per cent liquid state while being measured volumetrically, they average one per cent lighter weight per gallon for each 25 degrees F. increase above the standard measuring temperature of 60 degrees F. The exact data on temperature-weight relationships for all ARCADIAN Nitrogen Solutions are available on request from Nitrogen Division, Allied Chemical Cor-



"ARCADIAN", "NITRANA", "URANA" and "U-A-S" are trade-marks of Allied Chemical Corporation.

(continued on following page)

(continued from preceding page)

poration. The specific gravity or weight of anhydrous ammonia decreases still faster with an increase in temperature—about one per cent for each six degrees F. increase in temperature.

#### In Tanks and Pipes

All these liquids generate high pressures when they are trapped within tanks 100 per cent full of liquid, or in pipe lines between two closed valves. Ample vapor space must be allowed in all tanks. This takes a considerable amount of head space for anhydrous ammonia.

#### In the Mixer

In the distributor pipe inside the fertilizer mixer, the heat may be so great that special techniques must be invoked for coping with large amounts of ammonia gas. For specific help on this problem, see your Nitrogen Division, Allied Chemical, technical service representative.

Hot weather troubles with any ammoniating solution may start when the temperature of the solution reaches the boiling point at atmospheric pressure. This is a lower temperature than you would normally expect trouble, but it usually develops when you are using a pump located beneath the supply tank. If enough air pressure is added, it will prevent volatilization of ammonia gas at the critical points. As shown in the table, the boiling points of some ARCADIAN Nitrogen Solutions at atmospheric pressure, and their vapor pressures at 90 degrees F. and at 104 degrees F., show a need for alertness in handling.

#### Vapor Pressure Changes

At increased temperature, an ammoniating solution takes on the vapor pressure properties of a more volatile solution. For instance, at 90 degrees F., NITRANA 2 develops a vapor pressure of only 4 pounds, so that handling is easy. But at 104 degrees F., its vapor pressure of 10 pounds is about the same as that for NITRANA 2M, NITRANA 3 and URANA 6M at 90 degrees F. Warm weather always requires extra attention in moving solutions.

For example, at 100 degrees F. atmospheric temperature, the contents of an 8,000-gallon uninsulated tank car loaded with NITRANA 2 develops the following temperature and pressure:

Maximum daily high pressure: 29.3 pounds at gauge  
Average daily high pressure: 13 pounds  
Liquid temperature at the top level in the tank car: 108 degrees F.  
Liquid temperature in the middle of the tank car: 86 degrees F.  
Liquid temperature at the bottom of the tank car: 81 degrees F.  
Vapor temperature at the top of the solution: 131 degrees F.

Judging from the published pressure-temperature relationship, you might expect that 100 degrees F. temperature would build up only 8 pounds of pressure. The additional 5 pounds at average high pressure, and 21 pounds at maximum pressure, could cause trouble for an unwary operator.

Other spots where it may be hotter than you expect are in pipelines exposed to the sun, near metal siding in the sun, near dryers, in or near the hot mixer, or almost anywhere in a warm building.

#### Changing Solutions

In summer, many fertilizer producers change to a nitrogen solution which has a lower vapor pressure to avoid problems. You have a wide choice in the big line of ARCADIAN Nitrogen Solutions to meet the most exacting requirements. However, if you choose to use your winter solution, you may continue using it by making a few simple changes in equipment and operation. For instance, you can insulate your pipelines and improve the ease of operation both in hot weather and in cold weather.

You can get help in choosing the right ARCADIAN Nitrogen Solution by asking your Nitrogen Division technical service representative. Summer or winter, you can realize maximum benefits in fertilizer manufacture by picking the right solution for every situation. For technical advice and assistance, contact Nitrogen Division, Allied Chemical Corporation, 40 Rector Street, New York 6, N. Y.

## GREEN FIELDS CAN BE SALES MAKERS

**Green fields** speak as loud as big yields to many farmers. When the corn leaves lap in the row, the oats are shoulder-high, and the pasture is knee-high to cows, any farmer loves to show off his crops. That's a good time to go and see him, if he uses your fertilizer. It's also a good time to show his crops to other farmers.

One farmer applied a double dose of fertilizer to his corn by mistake. He made a big profit on the extra tonnage of silage produced by the extra fertilizer. But he didn't tell his neighbors about yields and profits. He told them how tall and green his corn grew during a dry season. He knew he made money from fertilizer. This was dramatized to him by the lush, green crop right before his eyes all summer.

It will pay you to take advantage of a farmer's pride in a good crop grown with your fertilizer. He can be an excellent salesman and demonstrator for you. Farm calls, when crops are green and growing, can produce plenty of success stories. The best way to tell these success stories is to take other farmers to see them. This enthusiasm sells fertilizer.

## BEST N FOR YOUR N-P-K



## NITROGEN

*There are many reasons why it pays you to use ARCADIAN® Nitrogen Products in the manufacture of your mixed fertilizers. Here are only a few:*

You are served by the leading producer of the most complete line of nitrogen products on the market. You have many different nitrogen solutions from which to select those best suited to your ammoniation methods and equipment. You get formulation assistance and manufacturing advice from the best-qualified technical service staff in the industry. You benefit from millions of tons of nitrogen experience and the enterprising research that originated nitrogen solutions. You get many important bonus values when you make ARCADIAN Nitrogen the N in your N-P-K.

## ARCADIAN Nitrogen Products

NITRANA® Nitrogen Solutions

URANA® Nitrogen Solutions

DURANA® Nitrogen Solutions

U-A-S® Nitrogen Solutions

N-dure® Solution

A-N-L® Nitrogen Fertilizer

Ammonium Nitrate

UREA 45 Nitrogen Fertilizer

Sulphate of Ammonia

American Nitrate of Soda

Allied  
Chemical

## NITROGEN DIVISION

MAIN OFFICE: 40 Rector St., New York 6, N. Y.



**PLANNING COMMITTEE**—Relaxing for a moment to have a photo taken, the planning committee for the Southwestern Fertilizer Conference and Grade Hearing pauses during its recent sessions. The Southwestern Fertilizer Conference will be held at the Galvez Hotel, Galveston, Texas, July 19-22. In the photo, standing, left to right, are: Jack Lindsey, International Minerals & Chemical Corp., Shreveport, La.; E. K. Chandler, National Plant Food Institute; G. A. Wakefield, Olin Mathieson Chemical Corp., Little Rock, Ark.; Mrs. J. F. Fudge; Dr. J. F. Fudge, College Station, Texas; Mrs. Stafford Beauboeuf; Dr. N. D. Morgan, American Potash Institute; Mrs. Morgan; Stafford Beauboeuf, John Deere Chemical Co.; Mrs. A. T. Edwards; A. T. Edwards, Red Star Fertilizer Co., Sulphur Springs, Texas; Mrs. G. H. Wakefield; Stanley Hackett, Dixie Fertilizer Co., and Harold Trammell, Farmers Fertilizer Co. Seated: Mrs. Jack Lindsey; Mrs. Stanley Hackett; Mrs. Harold Trammell, and Mrs. E. K. Chandler.

## Southwestern Fertilizer Conference to Feature Panel Discussions on Industry

GALVESTON, TEXAS — Program plans for the Southwestern Fertilizer Conference and Grade Hearing to be held here July 19-22, have been completed following a recent meeting of the planning committee. Headquarters for the conference will be the Galvez Hotel in Galveston.

The committee has chosen the theme: "Fertilizer Needs and Consumption in the Southwest," which will be discussed by panelists and speakers representing the fertilizer industry and state extension services.

The first panel will be entitled: "Where Are We and Where Should We Be?" Moderator will be John E. Hutchinson, director of agricultural extension service of Texas. Participants have been named as follows: Woody Miley, extension social specialist, University of Arkansas; John Cox, state agent, Louisiana; Dr. L. H. Brannan, director, agricultural extension service, Oklahoma; Dr. W. F. Bennett, extension soil specialist in charge of soil testing in Texas.

The second panel covers: "How Are We Going to Get There?" with the moderator being Dr. Sam Tisdale, agronomist, Sulphur Institute. Kenneth Bates, assistant director, agricultural extension service, University of Arkansas, will talk on "Teaching the Farmer"; Murray Rennick, Rolla Feed Mills, Rolla, Mo., will speak on "How a Dealer Does It." Mr. Rennick is nationally known for his excellent talks on how to be a good fertilizer dealer.

M. E. Wierenga, vice president

and manager of marketing, Ortho Division, California Chemical Co., Richmond, Cal., will discuss "Selling the Potential." Mr. Wierenga began his Ortho career as a salesman 13 years ago.

The Southwestern fertilizer planning committee is headed by Dr. and Mrs. N. D. Morgan, American Potash Institute. The remainder of the committee comprises the following:

Mr. and Mrs. E. K. Chandler, National Plant Food Institute; Mr. and Mrs. A. T. Edwards, Red Star Fertilizer Co.; Mr. and Mrs. Stafford Beauboeuf, John Deere Chemical Co.; Mr. and Mrs. Roy Frierson, Phillips Chemical Corp.; Mr. and Mrs. Harold Trammell, Farmers Fertilizer Co.; Mr. and Mrs. Gerald Wakefield, Olin Mathieson Chemical Corp.; Mr. and Mrs. Stanley Hackett, Dixie Fertilizer Co.; Mr. and Mrs. Jack K. Lindsey, International Minerals & Chemical Corp.; Dr. and Mrs. J. F. Fudge, state chemist, Texas, and Mr. and Mrs. Jimmy Powledge, National Hotels Corp.

### To Technical Position

BOUND BROOK, N.J.—Chipman Chemical Co., Inc., has announced the appointment of Robert K. Huckins as technical service representative for its Chicago district. Mr. Huckins was formerly technical service representative for the company's Bound Brook, N.J., district and served in this capacity since joining Chipman in 1957.

## IT DOESN'T ALWAYS PAY TO GO HOME EARLY

HAZARDVILLE, CONN.—Because they wanted to get off work early, two former employees of Old Fox Agricultural Sales, Inc., of Hazardville, recently decided to do something about it. According to police officials, Allen Gallagher, 21, and Jay L. Hundley, 24, allegedly vandalized the fertilizer plant so they would be sent home from work early.

Police staked out the plant after company management complained of mysterious vandalism that appeared to be an "inside job." As a result, Mr. Gallagher was charged with wilful destruction of property and using explosives with intent to injure persons or property, and Mr. Hundley was charged with making false complaints to police and wilful destruction of property.

Both got off work at the fertilizer plant . . . permanently.

## California Pesticide Use Set at \$100 Million

FRESNO, CAL.—Pesticides used in California include nearly 15,000 items, valued at \$100 million, members of the California Fig Institute were told recently.

Emil M. Mrak, Chancellor of the University of California at Davis, told the gathering that this amount of agricultural chemicals is used to protect an estimated 13 million acres of the state's farm and orchard land.

Mr. Mrak noted the figures in drawing attention to the public's increasing interest in the health aspects of agricultural chemicals.

He said confusion is high concerning the effect of chemical fertilizers and pesticidal sprays on foods. The "cranberry case," he said, resulted in a scare which has reached into virtually all food industries.

As a result, in California, a governor's fact-finding committee was appointed to present information on the use of agricultural chemicals.

Testimony during the four days of hearings pointed to agriculture's important role in California's economy, Mr. Mrak said. He noted that the industry is valued at about \$3 billion, and pointed out the need for education on all fronts. The program, he said, should extend to persons in all walks of life and literature should be in brief, easy-to-understand form.

The conference also discussed control of Drosophila through use of chemical, cultural and mechanical means.

### SHORT COURSE PLANNED

LAFAYETTE, IND.—A short course on fertilizer technology will be held at Purdue University Feb. 12-13 under sponsorship of the Soil Science Society of America, Werner L. Nelson, president of the society, has announced.

## Joins Potash Firm

SHREVEPORT, LA.—Leonard L. Lyle has joined the Shreveport district office of American Potash & Chemical Corp. as a sales representative, according to an announcement by Niven D. Morgan, Jr., district sales manager. Mr. Lyle is a graduate of Louisiana Polytechnic Institute.

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**SPRAYING SYSTEMS**  
**SPRAY NOZZLES**  
and related equipment

for better performance  
TeeJet Spray Nozzles with choice of over 400 interchangeable orifice tips.

for easier installation  
Split-Eyelet TeeJet Connectors. Simplify nozzle and drop pipe installation.

for better control  
DirectoValves for fast, accurate spray selection. Diaphragm pressure relief valves and all other accessories.

Most components in choice of brass, aluminum, Nylon and stainless steel for all spraying needs.

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**MOLDED FIBER GLASS**  
**Agricultural Tank**

**tough...**

**lightweight...**

**rust-proof...**

**corrosion-resistant**

Ideal for many farm uses, this 200-gallon tank is tops for use as a spray tank, portable water tank or storage tank. It fits standard spray units, is unaffected by many chemicals including most insecticides and liquid fertilizers, and will outlast metal tanks many times over. It costs considerably less than stainless steel.

Lightweight, exceptionally strong, easy to handle, easy to clean, this tough, translucent MOLDED FIBER GLASS tank withstands very hard usage.

Specifications: 200-gallon capacity; 58 3/4" length; 32" diameter; 55 pounds. (Special sizes and shapes molded to your specifications.) Available for immediate delivery, assembled or knocked-down. Special quantity discounts. Write today for detailed information.

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IN REINFORCED PLASTICS

Manufacturers' Shipments and Index of Production of Chemical Fertilizers  
(Millions of Dollars)

Year	A Mixed fertilizers	B Super- phosphates	C Total super- phosphates & mixed fertilizers*	D Nitrogenous and potash materials	E Total of all shipments	F.R.B. index (1957=100)
1950	546	104	659	70	729	75
1951	648	109	755	78	843	82
1952	734	111	852	98	950	90
1953	793	118	919	111	1,020	93
1954	787	131	855	137	992	98
1955	707	130	860	158	1,018	99
1956	693	142	851	156	1,007	99
1957	718	149	880	168	1,048	100
1958	716	155	886	177	1,063	100
1959	9783	9180	9980	200	1,180	112
1960	9793	9190	91,000	220	1,220	914

\*Includes in addition to mixed fertilizers and superphosphates also fertilizer materials of organic origin, and fertilizers not specified by kind.

†Estimated by Chemical and Rubber Division.

Source: Columns A, B and C represent values of shipments of fertilizers from plants classified by the Bureau of Census as within the fertilizer industry. Column D represents estimates of the values of nitrogenous and potassic chemicals shipped by the chemical industry directly to fertilizer users.

### Value of Fertilizers on Increase 1950-1960, U.S. Government Report Says

WASHINGTON — How fertilizer production and shipments have increased during the past decade is shown in a table prepared by the U.S. Department of Commerce, Bureau of the Census, covering mixed fertilizers, superphosphates, total superphosphates and mixed fertilizers, nitrogenous and potash materials, and totals of all shipments.

Total shipments in 1960, the table says, were valued at \$1.2 billion, as compared to \$729 million in 1950.

Values in every category were on the increase in the years from 1950, with exception of 1954 and 1956 when the totals were slightly less than the previous year's tally.

#### CONSOLIDATED DISTRICTS

RICHMOND, CAL.—California Chemical Co., Ortho Division, has announced the consolidation of its Mid-Atlantic and Western New York districts, effective May 1. According to M. E. Wierenga, Ortho marketing manager and vice president, the move gives the company more effective customer contact and will result in administrative and equipment economies.



TEN MILLION POUNDS—Western Wholesale Produce tells the world of its success as a distributor of Ortho plant foods and pesticides, in shipping its ten millionth pound of fertilizer in Eastern Colorado. Atop the freight car are Bert Van Zante, left, manager of Western Wholesale Produce, and Bob Anders, Ortho branch manager, Lucerne, Colo.

## Food Machinery & Chemical Changes Name to 'FMC Corporation' as of July 1

SAN JOSE, CAL.—Food Machinery and Chemical Corp. will change its name to "FMC Corporation" on July 1 of this year. A management proposal to make the name change received stockholder approval at the company's annual meeting held May 23 at FMC's executive offices in San Jose.

Paul L. Davies, FMC chairman, said that the company, as one of the most broadly diversified producers of industrial and agricultural machinery, basic chemicals, and defense materiel, had outgrown its original name.

According to company officials, FMC has been considering a change in name for several years during which time exhaustive name-change studies and surveys were undertaken. After considering and discarding many alternate possibilities, it was

decided that present and future interests of the company would best be served by adopting the corporate initials "FMC" as the name. Most major customers have used these initials for a long time in referring to the company.

James M. Hait, FMC president, explained that beginning on July 1, the physical changeover to the new name would proceed gradually throughout the balance of the year, so that FMC's various operations in this country and abroad can make the transition in an orderly fashion. In this way, FMC expects to be fully "in business" with the new name by Jan. 1, 1962, he says.

Mr. Hait also reported that on July 3, 1961, the company's ticker symbol on the New York Stock Exchange will change from "FDM" to "FMC."

## Tyler Leads the Way In Fertilizer Spreading

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**BREAK-**  
**THROUGH**  
in design and  
engineering!

## DO-IT-YOURSELF

fertilizing equipment which you can rent to your customers . . . spreads up to an acre per minute.

- Hauls and spreads fertilizer quickly and efficiently
- 45 foot spread pattern
- Investment in this machine will move up to 600% more fertilizer



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Line of Truck  
Bulk Spreaders

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#### SPECIFICATIONS

Body Weight	1500 lbs.
Hopper Dimensions	60" x 84"
Wheel Track	74 inches
Axle Rating	4000# each axle
Type Axle	Tandem Torsion Spring
Fans	Angled Twin 19 in. Dia.
Wheel Bearing	Sealed Timken Bearing
Capacity	2½ Ton
With Body Extension	19 in. 4 Ton
Spread Pattern	Approx. 45 Ft.
Spread Capacity Pr. Hr.	30-60 Acres

Field Speeds	6 M.P.H. 30 Acres Pr. Hr.
	12 M.P.H. 60 Acres Pr. Hr.
	18 M.P.H. 90 Acres Pr. Hr.
Highway Speeds	up to 60 M.P.H.

## Greatly Stepped-up Potash Imports Into India Seen in Five-Year Plan Ending 1966

**NEW YORK**—Imports of potash into India are expected to increase about six-fold in the next five years, if current estimates in the country's new five-year plan are accurate. India uses about 30,000 tons of potash a year presently, but by 1966, this figure may reach 200,000 tons. All of this will be imported.

The expansion story is likewise true of nitrogenous materials, but much of this need will be supplied from in-the-country sources, particularly from plants owned by the government. According to the plan, India in 1966 will be using 1 million tons of nitrogenous materials as compared to 170,000 tons at the present. Of the projected 1966 figure, the government will supply some 800,000 tons, according to information gathered by the Canadian Department of Trade & Commerce which has just completed a survey.

Phosphate consumption is scheduled for expansion, too. Compared to some 40,000 tons used each year at present, the 1966 figure calls for 400,000 tons of phosphatic fertilizers annually. Privately-owned facilities in India are expected to supply this tonnage. Production of these plant foods, however, will be based on imported phosphate rock and sulfur.

The Canadian report gives the following reasons for the sharp upward swing in fertilizer consumption:

An anticipated population increase of 80 million by 1966. "No conceivable volume of imported food can do more than supplement the basic need for greater production," observers say.

India's currently low rate of fertilizer consumption. Despite progress made during the past few years, Indian consumption remains among the lowest in the world. In the 1957-58 crop year it amounted to just over one pound per acre, as compared, for example, with 200 lb. in Japan.

With the boost in fertilizer production, Indian food production is expected to increase by 33% during the five years. The total agricultural outlay under the plan will approach \$5 billion.

Participation by U.S. and other foreign companies in the development program is being encouraged along these lines:

Supply of machinery, equipment and engineering services to new nitrogenous and phosphatic fertilizer plants.

Supply of raw materials such as sulfur.

Supply of potash "and, in the short run, perhaps other fertilizer materials as well."

Achievement of the 1966 goals will depend largely on whether India can improve its foreign exchange position.

In this connection, the Canadian report notes that India has never attained full operation of its installed superphosphate capacity because of foreign exchange shortages which have limited imports of phosphate rock and sulfur.

Among current developments reported by the Canadian agency:

A second government-owned nitrogenous fertilizer plant, located at Nangal in the Punjab, has just gone into trial operation. When operating at full capacity, it will produce 80,000 long tons of nitrogen a year in the form of calcium ammonium nitrate.

Two further government-owned plants are under construction in Orissa and Neyveli in Madras and slated for completion by the end of 1962. Rourkela will have an annual

## New York Soils Group Scheduled to Convene

ITHACA, N.Y.—More than 125 persons are expected to attend the annual meeting of the Empire State Soil Fertility Assn. at Hamilton College, Clinton, N.Y., July 11-12.

Sponsored in cooperation with the New York State College of Agriculture at Cornell University, the two-day event will feature tours to central New York farms. A main purpose of the meeting will be to bring industry and farm agency representatives up to date on the latest developments in soil science.

Keynoting the event at a banquet Tuesday evening, July 11, will be Frank J. Welch, assistant secretary of agriculture. The Washington official will speak on "Water Research and Conservation Problems."

The group will tour Oneida County farms July 12. Heading the tour, to include dairy farms and a snapbean

operation, will be Prof. L. C. Cunningham of Cornell. Emphasis will be placed on modern tillage, harvesting, and new equipment. The relationship between good soil fertility practices and farm management will be studied.

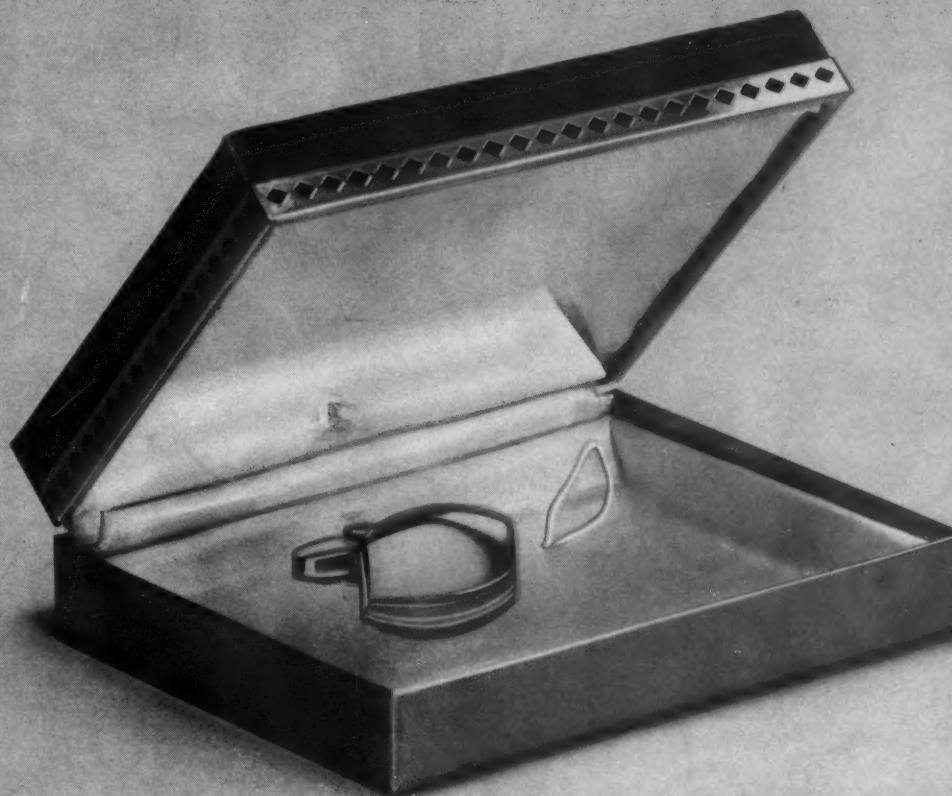
## Expansion Program For Texas Plant

HOUSTON, TEXAS—An expansion program to cost \$500,000 has been announced by Best Fertilizer Co. of Texas, located at Houston. The expansion basically will provide additional storage facilities, according to Russell C. Dellinger, president.

Also included in the program will be an additional mixing plant with a capacity of 300 tons.

Best began manufacturing operations in Texas in 1948. Daily production is 800 tons of ammonium sulphate and granular fertilizers. Kenneth Winborn is vice president and sales manager.

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## A Single Cuff Link Fills Only Half of Your Need. And Quality of Product Is Only PART of the Reason to Select a Source

Davison phosphates are highly respected products. They deserve their reputation because they have earned it over the years. To Davison, quality of product is important . . . but only part of the story. When you decide on Davison as your source for phosphates . . . normal, triple, or diammonium, everything is keyed to assure you of satisfaction. Delivery is dependable. Uniformity is carefully controlled and assured. And if you need technical assistance Davison experts are ready, willing and very able to help you.

There is nothing missing in the Davison philos-

ophy of good business. You get both quality . . . and service. There is a Davison representative in your area constantly. He can answer your questions and he is more than happy to serve you. If you would like to see him immediately, simply phone SARatoga 7-3900 (Baltimore).

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Hi-Flo® Gran-U-Lated Triple Superphosphate 46% APA • Hi-Flo® Run-O-Pile Triple Superphosphate 46% APA • Hi-Flo® Blend-Phos Triple Superphosphate 46% APA • Granulated Diammonium Phosphate 16-48-0 • Run of Pile Normal Superphosphate 20% APA • Granular Run of Pile Normal Superphosphate 20% APA • Granulated Normal Superphosphate 20% APA • Phosphate Rock—all grades and grinds • Phosphoric Acid—75% H<sub>3</sub>PO<sub>4</sub>—64.3% P<sub>2</sub>O<sub>5</sub> • Sulfuric Acid—60% Br<sub>2</sub>; 60% Br<sub>2</sub>; 98% H<sub>2</sub>SO<sub>4</sub> • Cleam—20% and 25%

**ARMY WORMS THREATEN**

**MADISON, WIS.**—An outbreak of army worms is possible this summer, Phil Smith, Wisconsin Department of Agriculture entomologist, has warned.

Mr. Smith said the moths had put in an early appearance, and continued cool weather might result in a large population. He said the last serious outbreak was in 1954, and noted that the worms usually come in cycles.

The State Department of Agriculture is keeping a check on the progress of the worms and will advise further if an outbreak becomes imminent, Mr. Smith said.

**Development of Soviet Insecticides Described in USSR Chemical Journal**

**WASHINGTON**—A discussion of the development and use of insecticides in the Soviet Union, translated from the USSR's "Journal of the All-Union Chemical Society," is available to science and industry through the Office of Technical Services, Business and Defense Services Administration, U.S. Department of Commerce, Washington 25, D.C., it has been announced.

The article, one of three translations on Russian insecticides published in report form, notes the progress made by American chemists and cites a number of U.S. patents in its bibliography. The collection of Soviet articles includes:

**"Trends in Soviet Insecticide Research"**—Translated from "Journal of the All-Union Chemical Society

imeni D. I. Mendeleyev," Vol. 5, No. 3, 1960, USSR. 104 pages. (Order 61-21005 from OTS, U.S. Department of Commerce, Washington 25, D.C., \$2.50.) In the past 12 years, American production of "organic preparations" to combat plant pests and diseases has increased "almost fivefold," according to Soviet scientist N. N. Mel'nikov, whose article, "Chief Directions in the Development of the Production and Use of Chemical Agents for Plant Protection," mentions U.S. progress in this field with approval.

"Such a vigorous growth in the production and use of chemical means for protecting plants is related to the great economic effect of their utilization," Mel'nikov notes. He concludes his discussion of insecticides by urging accelerated research by Russian chemists to increase development and production in the Soviet Union. The extensive bibliography at the end of the article cites a number of U.S. patents and publications.

The second article in this collection, also written by Mel'nikov, is "Organophosphorus Insecticides." This is a general discussion, with formulae, of the insecticidal properties of organic phosphorus compounds. These compounds, Mel'nikov notes, "... are surpassed only by DDT, but even DDT in many cases is successfully replaced by phosphoro-organic preparations."

"Chief Means of Applying Pesticides," the third article, mentions three countries as being the only nations which "... have at their disposal the technology for producing concentrated pesticidal preparations containing up to 75% of the active ingredient." These three countries, according to the Russian author, are the U.S., England, and Germany. The USSR's insecticide industry "... has lagged behind these capitalistic countries (in producing) highly concentrated wetting pesticidal powders." The article attributes this Soviet deficiency to the USSR's "limited assortment of surface substances and fillers."

The bibliography includes 38 citations, including several from American sources.

**TVA Board Authorizes \$100,000 Pilot Plant**

**WASHINGTON**—A pilot fertilizer plant project costing \$100,000 was authorized by the Tennessee Valley Authority board during its recent meeting here. The pilot plant will be located at Muscle Shoals, Ala.

Members of the board were in Washington to testify before a House Appropriations Subcommittee on TVA's \$31,205,000 budget for fiscal 1962, and the meeting was convened while all members were on hand, according to Herbert D. Vogel, chairman. Other directors are Arnold Jones and Aubrey Wagner.

The board said that the new Muscle Shoals project will seek to bring nearer to commercial production, particle-size manufacture of a variety of fertilizers. Presently, only ammonium nitrate and urea are prilled. The new project will seek to adapt this principle to other plant food products.

**New Hampshire Sets Value for Penalties**

**CONCORD, N.H.**—The Agricultural Advisory Board of the New Hampshire Department of Agriculture has set the official state value of fertilizer units to be used in triple-damage assessments against fertilizer deliveries found deficient in guaranteed formula.

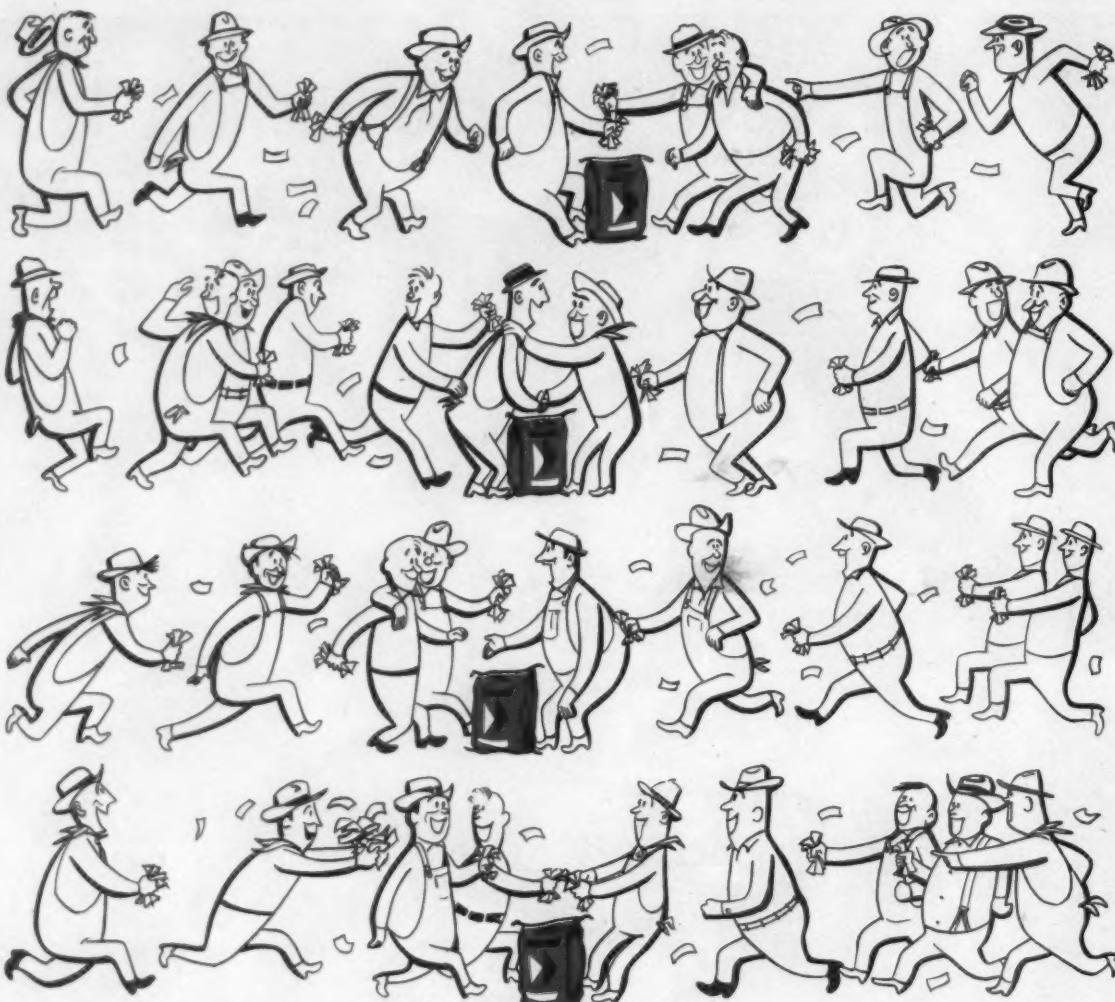
All fertilizer manufacturers doing business in New Hampshire were contacted for prices, and since no material changes were noted in these element prices since the previous year, the state adopted the same figures as were used in 1960.

The unit price (20 lb. lot) to be applied to nitrogen will be \$3, or 15¢ lb., while for phosphoric acid, the unit price will be \$2, or 10¢ lb. For potash, it will be \$1.20, or 6¢ lb.; with the same scale set for magnesium oxide and for boron.

**Price Schedule Announced**

**KANSAS CITY**—Spencer Chemical Co. has announced prices for its nitrogen fertilizer chemicals to apply for the forthcoming year. The new schedule lists only a few changes from current prices, the company says. A seasonal price schedule for solid urea and a price increase for low-pressure direct application solutions are among the changes listed.

The new schedule calls for a price effective May 16, 1962, of \$150 per ton for ammonia-ammonium nitrate solutions and \$158 per ton for ammonia-ammonium nitrate-urea solutions. Seasonal discounts are also being granted.

**MAGCOBAR GRANULARS HAVE SALES APPEAL**

That's right! Sales appeal that you can see and feel. When you make pesticides with MagcoBar granular carriers, you build sales appeal right into your product. MagcoBar granulars appeal to farmers because they're free flowing, feel better, and look better.

And when it comes to performance they appeal, too. MagcoBar granulars are high in absorbency,

consistent in high quality, and uniform in clean grades.

Farmers will buy pesticides made with MagcoBar granulars because they look better, they are better.

See for yourself. Put the sales appeal of MagcoBar granulars into your product. Call or write the man from MagcoBar today.



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## OFF-JOB SAFETY

Continued from page 22

reach into the homes of its employees, to treat them as individuals whose well-being and happiness are truly the concern of their employer.

**"The objection may be raised that paternalism is likely to enter the scene when a company interests itself in the off-hours activity of its employees. But it need not if the approach is intelligent and friendly."**

"An effective off-the-job safety program can mean better public relations as well. It enhances the role of a company as a public-spirited member of the community. It is a tangible demonstration that the company recognizes its public obligations and is meeting them with constructive action which contributes to the general welfare."

"Many companies have found that their off-the-job safety programs provide an unforeseen bonus in helping to prevent accidents on the job. In fact, a steady effort in the field of off-the-job accident prevention characteristically is accompanied by a steady reduction in work injuries."

"A sound psychological reason accounts for this interaction between safety on the job and safety off the job. The same reason underlies the development of psychosomatic medicine and modern methods of education. It is that people are whole individuals. As such, they learn best when an idea has application to all the various aspects of their lives."

"That off-the-job safety programs pay off, that they reduce the incidence of injuries both on and off the job is eloquently attested to by the records of numerous companies which have pioneered in attacking the total problem of accident prevention. Here are only a few examples, but they are typical:

"In one case, the on-the-job frequency rate dropped 50% in five years and, while the reduction in the off-the-job rate was not so great, still it showed substantial progress, going in four years from 6.34 to 4.89. Off-the-job motor-vehicle fatalities for this same company also declined over a four-year period, from about the national rate to 40% less than the national rate for all workers."

"Another example of simultaneous decline in on-the-job and off-the-job injury rates turned up in a company whose figures for each of three years were: on-the-job frequency rate, 1.5, .82, and .36; off-the-job frequency rate, 15.05, 13.29, and 11.7.

"In one year, a third company cut its number of days lost because of off-the-job injuries nearly in half, from 1,138 to 695.

"These improvements are impressive. They assume full significance, however, only when translated from statistics into terms of human happiness and well-being and of economic stability for the company, the community and the nation."

Implementing such a program requires the establishment of a fact-finding and recording routine to obtain accurate data. Through analysis of this information, the magnitude of the company's problem may be determined and the types of accidents may be identified in order to focus special attention on them.

A number of methods and sources are used for obtaining accurate information about off-the-job accidents. Daily absentee reports are one common method, and in other, larger firms, a visiting nurse may be used to gain additional detailed information on a home accident. Payroll reports and the records of insurance companies carrying medical, hospital and group accident policies may also be used.

Ways to publicize such a program among plant people are, of course, almost limitless. How to go about it depends upon facilities at hand, and the number of employees involved. The company bulletin board, mimeographed newsletter, or local newspaper provides good media for getting the idea across.

"To keep the off-the-job safety program from losing momentum, a frequent change of pace is necessary. The task of maintaining employee interest requires ingenuity, imagination and an understanding of people. Appeals to human nature are paramount," NSC continues.

The devices and techniques which have proved their worth in promoting and sustaining interest in occupational safety programs can, of

course, be used with equal effectiveness in off-the-job safety programs."

In summary, here are six steps to safety off the job, according to the Safety Council:

1. Initiate and give executive support and publicity to a broad off-the-job accident prevention program in your organization.
2. Make this program a permanent and important function and responsibility of the regular safety organization.
3. Encourage employees to take an active part in planning and conducting the program.
4. Collect and analyze off-the-job accident data and use them as the basis for preventive activities.
5. Develop and maintain the interest of employees and their families by all means available.
6. Allocate a reasonable amount in the company budget for carrying on the program.



"On your toes, Mac . . . On your toes!"



Just Say  That's All

and get both automatically

Continuing research and development assure you of consistently fine quality. Continuing recognition of the industry's need for dependable deliveries assures you of consistently fine service—same day shipment.



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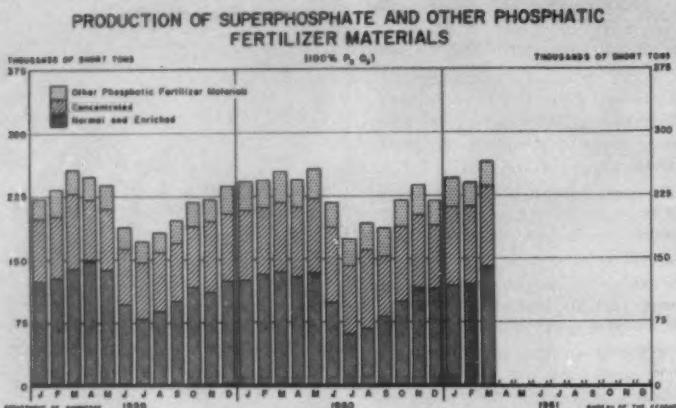
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**PRODUCTION FIGURES**—Production of superphosphate and other phosphatic materials during March, 1961, amounted to 266,180 tons compared with 252,501 tons in the same month of 1960. Chart by Bureau of the Census, U.S. Department of Commerce.

## Stauffer Introduces New Nabam Formulation

NEW YORK—Stauffer Chemical Co. is marketing a new dry form of nabam fungicide under the trade name "Nabam 93-SP." It is an instantly soluble, yellow, free flowing powder mixed with a metallic sulfate. It was formerly available only in liquid form. The new dry form is nicknamed "instant" nabam because of its instant solubility.

### MERGER ANNOUNCED

WILMINGTON, DEL.—Ralph K. Gottshall, board chairman and president of Atlas Chemical Industries, Inc., has announced the merger of the Stuart Co. with and into Atlas became effective as of May 31. Stuart manufactures ethical pharmaceuticals at its headquarters in Pasadena, Cal., and distributes them nationally.

## New Open-Mouth Bagger Devised for Fertilizer

NEW YORK—An open mouth packaging system designed exclusively for fertilizer has been introduced by St. Regis Paper Co., the firm has announced. The new system consists of a new "Streamflow" scale and special open mouth closing equipment, designed to make possible higher production rates and lower packaging costs.

The equipment will handle all grades of granular and pulverized fertilizer, the makers state. Other claims include high productivity, weight accuracy, dependability of operation, and low purchase price. A weight accuracy of plus-or-minus four ounces at average operating speeds is also achieved, they say.

The scale handles up to 30 50-lb. charges per minute, up to 24 80- and 100-lb. charges per minute, and up to 14 167- and 200-lb. charges per minute.

Four features of the "Streamflow" scale include: (1) A continuously operating belt feeder capable of delivering 84 tons of material an hour (14 200-lb. bags a minute). (2) A new scale design consisting of a double compartment bucket suspended from a single scale beam. While one compartment is dumping, the other fills. The continuous stream from the belt feeder is diverted from one compartment to the other rather than being cut off. The continuous flow, St. Regis says, allows maximum production. (3) Positive action is gained through pneumatically-operated air cylinders on the diverter and bucket grates. (4) The system also allows quick changeover from one weight or grade to another.

The makers say that the new machines are of rugged construction, with simplified controls and design. Provisions for easy lubrication of moving parts and a ball-bearing scale bucket suspension system plus wide use of non-corrosive materials, make maintenance easy, they add.

## Testing Costs Rise

BURLINGTON, VT.—The soil testing service at the University of Vermont here is now charging \$1.50 for testing either one or two samples of soil, it has been announced by Winston A. Way, UVM extension agronomist.

He said special mailing containers with complete instructions were available from county agents or the soil testing laboratory and that this charge prepays for the service, which includes guides to the use of fertilizers.

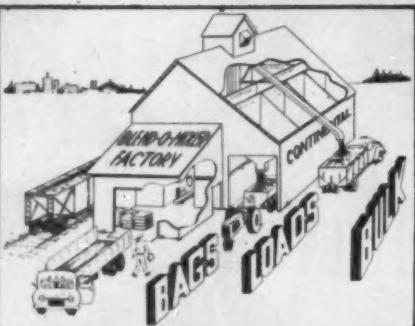
## WEEDS—EXPENSIVE PARASITES

FARGO, N.D.—North Dakota's agricultural industry loses about \$75 million annually because of avoidable weed infestations in small grain crops, the North Dakota State University says.

In 1960, gross cash crop receipts totaled about \$342 million. This is only 4½ times the annual loss of income chalked off to weeds, says Bjorne Naaden, NDSU extension farm management economist.

At this rate it would take only 4½ years for total estimated losses of crop income due to weeds to equal the total crop income produced in 1960. Mr. Naaden explains that on the average, it costs a farmer \$6 per acre to "put up" with weeds. Agronomists at the university believe that 50% of this crop loss is caused by wild oats and the remaining loss is due to broadleaf weeds. By controlling weeds, a farmer saves about \$3 an acre by spraying for broadleaf weeds. At a cost of \$1 to \$1.50 per acre for spraying, this still allows him a net return above costs of roughly \$1.50 to \$2 per acre.

## Mr. Fertilizer Manufacturer . . .



You Can **INCREASE PROFITS AS MUCH AS \$10 PER TON AS**

## BLEND-O-MIXER

Here Is The Means To Broaden Your Line and **INCREASE Profits**

Blend-O-Mixer is a self-contained, completely automatic fertilizer mixing factory. The 17' x 5' unit delivers 1 ton every 3 minutes.

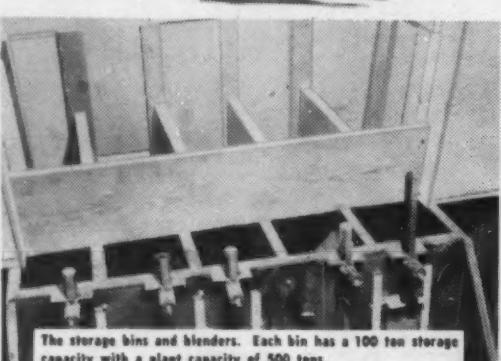
With the Blend-O-Mixer there's no need to "sell around" analysis called for by soil tests. You can meet prescription soil test demands every time! Can be used on units of plant food as well as complete analysis. Blends literally thousands of possible formulas.

You can add a Blend-O-Mixer to your present plant facilities three ways:

**1 BUY** the Continental BLEND-O-MIXER and install it in your own plant. We do the installation . . . usually completed in one week.

**2 RENT** a BLEND-O-MIXER at nominal tonnage charge. With this arrangement, no capital investment is involved and manufacturer is able to realize substantial savings in production costs.

**3 BUILD** separate building for BLEND-O-MIXER adjacent to your existing plant. Low, convenient, extended payments. Your new building and equipment should be debt free in three years.



View showing the liquid mixing unit.

### FREE BROCHURE

Please send me brochure and more information about the Blend-O-Mixer:

I have my own building   
I will need a plant: Liquid  Dry   
My present annual tonnage is \_\_\_\_\_

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Exterior View of a 650 Ton Capacity  
Blend-O-Mixer Plant.  
This one is located in Nevada, Iowa.



## Cyanamid Plans to Increase Production At Florida Plant

**NEW YORK**—Plans to increase production capacity of phosphate fertilizer at American Cyanamid Co.'s Brewster, Fla., plant were announced May 26 by C. D. Siverd, general manager of the agricultural division.

The multi-million expansion will provide facilities for producing 200,000 tons a year of granular triple superphosphate fertilizer. In addition, a new coarse triple superphosphate and an increased supply of run-of-pile material will be available from the plant.

The new production capacity is part of Cyanamid's long-term program of expansion to supply the ever-increasing needs of agriculture for high-analysis fertilizers, Mr. Siverd said. In 1960, Cyanamid announced plans to double capacity for production of phosphoric acid, which will be completed by mid-1961. A considerable portion of the expanded capacity for acid production will provide the basic ingredient for manufacture of triple superphosphate. The output of the plant will be marketed throughout the U.S. and abroad.

Equipment and installations approved by the Florida State Board of Health will provide for control of air pollution. Also involved in the expansion are increased laboratory facilities designed to handle a larger volume of sampling and analyses of products as a part of Cyanamid's service to customers.

Production utilizing the new installations is expected to begin early in 1962.



Charles L. Hovey David H. Marsden

### Eastern States Advances Pair to New Positions

**WEST SPRINGFIELD, MASS.**—Charles L. Hovey, previously head of agricultural chemicals research at Eastern States Farmers' Exchange, has been advanced to manager of one of eight newly-created field areas. In this new position Mr. Hovey will direct all Eastern States activities within his area in Connecticut and western Massachusetts. His headquarters will be in West Springfield, Mass.

David H. Marsden, previously associated with Hovey, has been promoted to head of Eastern States agricultural chemicals research department. Dr. Marsden received his B.S. and M.S. degrees from the University of Massachusetts, and his Ph.D. from Harvard University. Before joining Eastern States in 1954, he was plant pathologist at the Shade Tree Laboratories, University of Massachusetts.

### PLANT ACCIDENT FATAL

**SPRINGFIELD, ILL.**—Charles V. Carrier, production manager of Chemlizer Corp., Springfield, was killed instantly in a recent plant accident. Although the accident was apparently witnessed by no one, it appeared that Mr. Carrier had backed a front end loader over the edge of a four-foot platform and the machine fell on him. Fred Thady, manager of the firm, said he heard the crash and found Mr. Carrier pinned under the machine.

## Nitrogen Output Rises In February This Year

**WASHINGTON**—Production of anhydrous ammonia and ammonium nitrate increased in February, 1961, over the same month of last year, according to a report just issued by the Bureau of the Census, U.S. Department of Commerce. During the same month, however, production of sulfuric acid dropped somewhat from the same month's figure in 1960.

Anhydrous ammonia was produced in the amount of 400,611 tons in February this year, and 381,279 tons in February, 1960. Figures for ammonium nitrate were 269,351 tons and 263,572 tons, respectively.

Sulfuric acid production declined in February, 1961, as compared to the same month last year. The figures were 1,388,695 tons in 1961 and 1,501,848 tons in 1960.

### State Fertilizer Consumption for Indicated Periods of 1961\*, in Tons

	January	February	March	First Quarter Total	April
Alabama .....	15,481	.....	194,667	.....	.....
Arizona .....	.....	.....	.....	48,742	.....
Arkansas .....	9,882	23,548	60,709	94,139	105,999
Florida .....	197,675	243,317	248,260	689,252	193,154
Georgia .....	.....	.....	.....	222,787	.....
Kentucky .....	72,214	44,842	53,379	170,455	76,818
Louisiana .....	11,205	17,421	44,538	73,164	73,812
Mississippi .....	17,825	46,462	118,348	177,150	193,506
Missouri .....	40,032	42,887	67,910	149,929	120,750
New Mexico .....	.....	.....	.....	23,207	.....
North Carolina .....	70,678	105,370	324,097	500,145	463,919
Oklahoma .....	5,108	9,875	21,450	36,433	18,661
Oregon .....	.....	.....	.....	58,303	.....
South Carolina .....	30,504	73,099	284,236	307,839	123,024
South Dakota .....	21,338	.....	.....	.....	.....
Texas .....	27,351	53,844	141,604	222,799	48,794
Virginia .....	.....	.....	.....	258,171	.....

\* As reported officially by each state.

# SULFURIC ACID

WE ARE BASIC PRODUCERS



SERVING THE GROWING SOUTHEAST



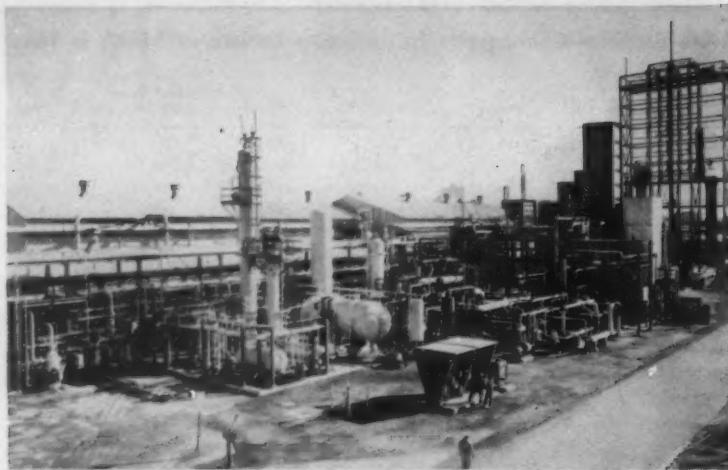
The Sulfur contained in the Ore we mine yields Virgin Sulfuric Acid of highest quality. We produce all grades of Sulfuric Acid from 60° Baume through the various Oleums.

Call JACKSON 3-5024, Atlanta, Georgia, or write



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612-629 GRANT BUILDING, ATLANTA 3, GEORGIA



**NEW START-UP FACILITIES**—Sun Oil Company's ammonia plant at Marcus Hook, Pa., uses a direct contact electric resistance heater to start up the ammonia synthesis process. The 400 KW heater has a heated length of 14 feet. Photo courtesy Sun Oil Co.

### Indexing of World's Plant Life Aided by Electronics

GENOA, ITALY—Details of an International Plant Index, an undertaking to catalogue all of the earth's plant life on IBM cards, were revealed to taxonomists gathered from all over the world at the recent Botanical Institute of the University of Genoa.

Sydney W. Gould, IPI director, told how data-processing equipment can aid the indexing project, supported by a grant from the National Science Foundation in the U.S.

### Big Program Planned

LONDON—Fisons, Ltd., has announced plans for construction of two fertilizer plants at Milford Haven, Pembrokeshire, Wales, as part of its \$33 million expansion program. Fisons is one of Britain's largest fertilizer manufacturers.

### California Firm in Expansion Program

SAN FRANCISCO—The California Farm Supply Co. has appointed Stanley M. Woogerd as manager of its agricultural chemical division, a newly created position.

Mr. Woogerd has long been active in the farm chemical field. He has spent the past six years as general manager of the Oasis Chemical Co., in Imperial County, and for the previous 14 years was with the Shell Development Corp. in Emeryville.

His new activities will include sales, entomological and formulation research, field testing, development of new products, evaluation of new chemicals, product quality control, and technical services to customers on the proper use of new materials, labeling, registration, and other technical problems.

The California Farm Supply Co. has opened a new insecticide manufacturing plant at Traver, Cal. This new plant, expected to be producing both liquids and dust before the end of June, was designed to turn out pesticide products at low production costs.

### 25th Anniversary for Agriculture Agency

NEW YORK—Albert Sidney Noble Agency, New York, celebrated its 25th year of business on June 1, 1961. The agency specializes in agricultural advertising and public relations.

Starting as a one-man shop, the A. S. Noble organization today handles pesticide, fertilizer and feed accounts. All key agency employees have comprehensive agricultural backgrounds.

Mr. Noble began his career as a newspaperman. He came to New York City in 1928 as an advertising manager, and opened his own agency in 1936. He is a graduate of Mississippi State University.

### Michigan Chemical Elects

SAINT LOUIS, MICH.—The board of directors of Michigan Chemical Corp. re-elected the following officers at a recent meeting: Theodore Marvin, chairman of the board and president; George L. Innes, vice president of sales and development; Kenneth E. Walker, comptroller; Russell J. Knapp, secretary and treasurer; Robert M. Hutchison, assistant secretary and assistant treasurer, and Josephine M. Curtiss, assistant secretary and assistant treasurer.

Also at the meeting Alex J. Romanski was elected vice president of operations.



**BOMBS AWAY**—Plastic film used in the manufacture of heavy duty shipping sacks by the multiwall bag division of Owens-Illinois is tested by this instrument in the new forest products group laboratory of O-I in Toledo, Ohio. A weight is released from varying heights onto the plastic film, to determine what weights can be carried by a particular film.



**This familiar symbol**

**represents the extra care  
that goes into ...**

## SWIFT'S MINUTE MAN PHOSPHATES

**Phosphate Rock—Ground and Unground  
Triple Superphosphate**

Extra care at Swift's Phosphate Center means extra care in every stage of filling your needs . . . extra care in prospecting and mining . . . extra care in processing and quality control . . . extra care in scheduling and shipping . . . even extra care in record keeping.

It is the kind of extra care you get only from people who know they serve themselves best by serving you best, just as the Minute Man, who symbolizes Swift's phosphatic products, served himself by serving others.

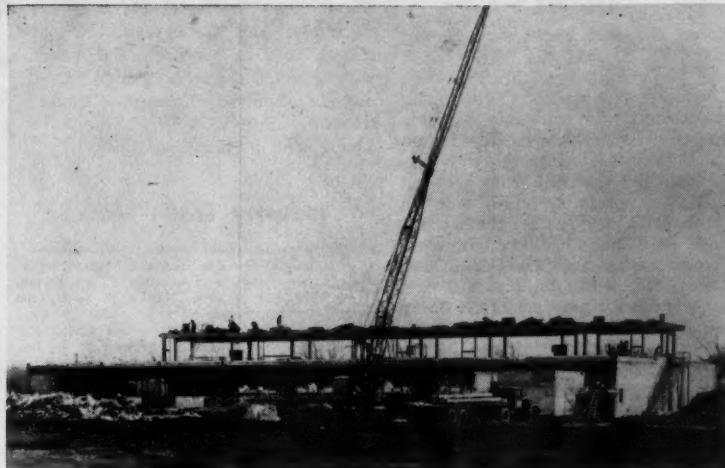
You'll enjoy doing business with Swift's Phosphate Center . . . with dedicated people who want to serve you with extra care. Have a Swift Phosphate Center Representative outline the advantages Swift's service offers you in phosphates—triple, phosphate rock or ground phosphate rock.

THE SERVICE CENTER FOR ALL YOUR PHOSPHATE NEEDS

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Phosphate Center • Bartow, Florida**

*To Serve Your Industry Better* WITH MINUTE MAN PHOSPHATE ROCK, GROUND PHOSPHATE ROCK AND TRIPLE SUPERPHOSPHATE





**PROGRESS NOTED**—The new research laboratory being built by Niagara Chemical Division, Food Machinery & Chemical Corp., is well under way. The above photo shows the construction project at Middleport, N.Y. Upon completion this fall, the facilities will be utilized for research in agricultural pesticidal products.

### Niagara's New Research Lab One-Third Completed

MIDDLEPORT, N.Y.—Construction is about one-third completed on the new research laboratory of Niagara Chemical Division, Food Machinery and Chemical Corp. Located at Middleport, N.Y., the unit is expected to open in October, as scheduled. It will engage in a search for new pesticides—including systemics, viricides and other types of materials to combat farm pests.

Work on the new facilities thus far completed includes framework, installation of water lines and sewers, and partial brickwork on outside walls. The structure has been planned to allow for construction of an additional wing in the future.

Special analytical equipment, many other innovations and a significantly increased staff are planned for the new laboratory. Upon completion of both wings it is believed that some 150% more compounds can be screened by the company each year than is presently possible.

### Calchem Executive Awarded High French Decoration

RICHMOND, CAL.—Norbert B. Van Buren, general manager of Eastern Hemisphere Operations for California Chemical Co., was recently awarded the highest honor the French government bestows on a non-countryman in recognition of his contributions to industry and agriculture in France and his efforts to promote Franco-American

 friendship and cooperation. The Knight's Cross of the Legion of Honor was conferred on Mr. Van Buren by General Charles De Gaulle, President of France. Mr. Van Buren is one of the few United States citizens to receive the award in the 150 years since its origination.

In 1950, as European manager for the Ortho Division of California Chemical Co., Mr. Van Buren organized a branch company in France which was later converted into a full French corporation, California Spray-Chemical Compagnie Francaise, S.A., with headquarters in Paris.

### NEW STORAGE FACILITY

DECATUR, ILL.—A \$15,000 county building permit was recently issued to the Sangamon Grace Ammonia Co. for construction of an anhydrous ammonia storage tank and compressor at Argenta, Ill. The storage tank will have a capacity of 30,000 gal.

## Potash Deliveries Rise 10% in First Quarter This Year

WASHINGTON—Deliveries of potash for agricultural purposes in the United States, Canada, and also, Puerto Rico by the eight principal American producers and also the importers totaled 1,115,911 tons of salts containing an equivalent of 647,764 tons K<sub>2</sub>O during the first three months of 1961, according to the American Potash Institute. Excluding imports, this was an increase of 10% in salts and K<sub>2</sub>O over the same period in 1960.

Continental United States took 607,799 tons K<sub>2</sub>O, Canada, 25,236 tons, Puerto Rico, 10,108 tons and Hawaii, 4,621 tons K<sub>2</sub>O. Exports to other countries were 97,915 tons K<sub>2</sub>O, a decrease of 19%.

Deliveries of potash for non-agri-

cultural purposes for the first quarter amounted to 37,423 tons K<sub>2</sub>O, a decrease of less than 1% under last year.

Total deliveries for all purposes were 1,339,801 tons of salts containing an equivalent of 783,102 tons K<sub>2</sub>O. Excluding imports, this was an increase of over 4% in salts and K<sub>2</sub>O over the first quarter of 1960.

### Fire Destroys Plant

ALBUQUERQUE, N.M.—Fire destroyed a small fertilizer mixing plant owned by the Albuquerque Chemical Co. here May 13. It was apparently caused by a short circuit.

Jesse Baxter, company owner, estimated that damages would total \$14,000. These included the loss of a corrugated steel building worth about \$5,000, a chemical blender valued at \$3,000, and 75 tons of fertilizer chemicals—mainly ammonium sulfate and sulfur—worth about \$6,000.

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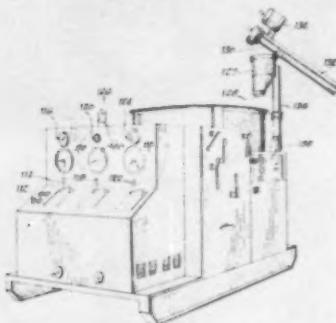
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# PRODUCTION PROCESS PATENTS

2,985,513

**Liquid Fertilizer Processing Equipment.** Patent issued May 23, 1961 to Will R. Stephens, Cedar Rapids, Iowa, assignor to Barnard & Leas Manufacturing Co., Inc., Cedar Rapids.

Process equipment comprising a tank having a cylindrical upper section and a conically-shaped lower section having its apex at the bottom, a liquid outlet opening at the apex of the conical section at the bottom of the tank, a liquid inlet in the side wall of the cylindrical section spaced



from the upper edge by an amount greater than the space above the liquid level, means for recirculating the liquid from the outlet at the bottom to the inlet in the side wall, a mixer mounted within the tank below the liquid level formed of an elongate inner member having an outlet at one end and an inlet at the opposite end to define a passage extending continuously therethrough, an outer member spaced about the inner member for a substantial length thereof and secured thereto in sealing relation to provide a confined chamber therebetween surrounding the inner member, a plurality of openings through the inner member for communicating the chamber with the passage through the inner member, and an inlet in communication with the chamber, means communicating the inlet to the inner member with a source of one liquid under pressure, means communicating the inlet to the chamber with another source of the liquid under pressure whereby the one liquid flowing through the passage draws the other liquid from the chamber for admixture therewith, a header in the base portion of the tank spaced from the bottom wall and having a plurality of outlets for issuing liquid mixture in various directions into the tank, and means communicating the outlet of the mixture with the header, and means controlling the amount of liquid introduced through each of said communicating means in the inlet to the mixer.

2,985,527

**Nitric Acid Process for the Production of Soluble Phosphates.** Patent issued May 23, 1961, to Ernest S. Nossen, Fairlawn, N.J. A process for the production of dicalcium phosphate from phosphate rock wherein the acid used in leaching the rock and the calcium oxide extracted from it are recovered, which comprises leaching phosphate rock with an aqueous nitric acid solution whereby a slurry is formed comprising a solid gangue portion and a liquid portion containing phosphorus compound and calcium nitrate, adding to said slurry a first portion of inorganic alkaline compound selected from the group consisting of lime and limestone in sufficient quantity to adjust the pH

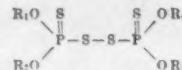
of said slurry to a value of about 1.5, separating the solids from the liquid in said slurry, adding a second portion of said inorganic alkaline compound to the liquid separated in sufficient quantity to adjust the pH above 4 so that the phosphorus compound therein is precipitated from said separated liquid as dicalcium phosphate and calcium nitrate is retained in said separated liquid, recovering said dicalcium phosphate, thermally decomposing the calcium nitrate contained in said separated liquid to recover the nitric acid and calcium oxide and recycling said recovered nitric acid to said acid leaching step.

2,985,743

**New and Improved Rodenticides.** Patent issued May 9, 1961, to Alexander Galat, Yonkers, N.Y. Process for the preparation of new compositions of matter including: forming a multivalent metal salt of a crude 2-acyl 1,3-indandione, dissolving said multivalent metal salt in an alcohol whereby an alcohol adduct of the multivalent metal salt is formed, crystallizing the resulting solution to precipitate the alcohol adduct in solid form, separating the solid alcohol adduct from the mother liquor and washing the solid alcohol adduct with an organic solvent to remove impurities originally associated with the crude 2-acyl 1,3-indandione whereby the solid alcohol adduct of the multivalent metal salt of the 2-acyl 1,3-indandione is obtained in essentially pure form.

2,985,844

**Pesticidal Compositions Comprising Phosphinothioyl Disulfide.** Patent issued May 9, 1961, to Joe R. Willard, Middleport, N.Y., James F. Allen, South Charleston, W.Va., and Kenneth R. Holden, East Point, Ga., assignor to Food Machinery & Chemical Corp., New York. The method of controlling mite pests which comprises applying to the infested area a toxic amount and concentration of a phosphinothioyl disulfide of the formulation



wherein  $\text{R}_1$ ,  $\text{R}_2$ ,  $\text{R}_3$  and  $\text{R}_4$  are selected from the group consisting of ethyl and isopropyl radicals, said composition produced by reacting phosphorus pentasulfide with the mixture of ethanol and isopropanol wherein said alcohols are present in the ratio of three moles of ethanol per mole of isopropanol to form a mixture of hydrogen phosphorodithioates, and oxidizing said mixture of phosphorodithioates to produce said phosphinothioyl disulfide composition.

2,985,465

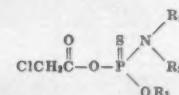
**Reaction Product of Triethyl Phosphate and Trichloroacetyl Chloride as an Insecticide.** Patent issued May 9, 1961, to Martin J. Diamond and Gustave K. Kohn, Berkeley, Cal., assignors to California Research Corp., San Francisco. An insecticidal composition comprising an inert insecticidal adjuvant and a toxic concentration of the reaction product of the reaction of trichloroacetyl chloride and an amount from an equimolar proportion to a slight molar excess of triethyl phosphate at a temperature in the range of about 80°-110° C. under conditions resulting in the evolution of ethyl chloride.

2,983,594

**Trace Element Fertilizers.** Patent issued May 9, 1961, to Walter Jost, In der Calle über Iserlohn, Hemberg 1, Germany. The method of fertilizing agricultural land with waste products from the copper-fabricating industries, said products having large surface area and containing copper and traces of elements, selected from the group consisting of zinc, cobalt, manganese, molybdenum, boron and iron, which comprises fertilizing said land directly and without further treatment with said waste products, finely divided, containing copper in amounts ranging from 44 to 85% and in the form of compounds, selected from the group consisting of copper grinding dust, copper hammer scale, lower copper oxides and mixtures thereof.

2,983,595

**Phosphoramidic Acid Mixed Anhydrides in Method of Weed Control.** Patent issued May 9, 1961, to George A. Saul and Joseph W. Baker, Nitro, and Kenneth L. Godfrey, St. Albans, W.Va., assignors to Monsanto Chemical Co., St. Louis, Mo. The method of destroying vegetation which comprises applying thereto a toxic concentration of a mixed anhydride of the structure



where  $\text{R}_1$ ,  $\text{R}_2$  and  $\text{R}_4$  represent lower alkyl groups.

2,981,654

**Insecticidal Repellent.** Patent issued April 23, 1961, to Willis N. Bruce, Champaign, Ill., assignor to Lee Ratner, Miami Beach, Fla. An insecticidal repellent comprising a combination of from about 0.2% to

about 99.5% by weight of di-n-butyl succinate and from about 98% to about 0.5% of a chlorinated insecticide selected from the group consisting of dichloro diphenyl trichloroethane, diethyl diphenyl dichloroethane, and methoxychlor.

## Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

**Panogen**, in capital letters, for agricultural chemicals, namely, disinfectant, fungicidal and pesticidal compositions employed in the treatment of soil and turf. Filed June 3, 1960, by Morton Chemical Co., Chicago, Ill. First use on or about March 26, 1959.

**Termitbar**, in capital letters, for liquid insecticide. Filed June 8, 1960, by Bird & Son, Inc., East Walpole, Mass. First use May 5, 1960.

**Kwik-Tox**, in heavy capital letters, for insecticides and fungicides. Filed Aug. 18, 1960, by Miller Chemical & Fertilizer Corp., Baltimore, Md. First use May 1, 1939.

**Neutramon**, in capital letters, for fertilizers. Filed Nov. 2, 1959, by Ruhr-Stickstoff Aktiengesellschaft, Bochum, Germany. First use March 4, 1959; in commerce, March 13, 1959.

**Gy-Flor**, in capital letters, for chemical used in the manufacture of chemical fertilizers. Filed Nov. 18, 1959, by Geigy Chemical Corp., Ardsley, N.Y. First use Oct. 13, 1959.

**Fertimulch**, in hand-lettered capi-

# UNIVERSAL PRESENTS

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tals and lower case, for bags and bales of bark soil conditioners. Filed Aug. 1, 1960, by Scott Lumber Co., Inc., Burney, Cal. First use Oct. 1, 1958.

**Royster Bonanza**, the first word in hand-lettered script, and the second in capital letters, for fertilizers. Filed March 24, 1960, by F. S. Royster Guano Co., Norfolk, Va. First use, 1956.

**Royster Vim**, the first word in hand-lettered script, and the second in capital letters, for fertilizers. Filed March 24, 1960, by F. S. Royster Guano Co., Norfolk, Va. First use, 1956.

**Garden Pearls**, in script, for soil conditioning powder. Filed Sept. 8, 1960, by Ceb-O-Lite, Inc., Jersey City, N.J. First use, Feb. 29, 1960.

**Dri-Die**, in capital letters, for insecticides. Filed Oct. 30, 1958, by W. R. Grace & Co., New York. First use Oct. 15, 1958.

**Impazine**, in capital letters, for chemical compound incorporated as an ingredient in the manufacture of herbicides. Filed April 30, 1959, by Geigy Chemical Corp., Ardsley, N.Y. First use April 10, 1959.

**Simetone**, in capital letters, for chemical compound incorporated as an ingredient in the manufacture of herbicides. Filed April 30, 1959, by Geigy Chemical Corp., Ardsley, N.Y. First use April 10, 1959.

**Atratone**, in capital letters, for chemical compound incorporated as an ingredient in the manufacture of herbicides. Filed April 30, 1959, by Geigy Chemical Corp., Ardsley, N.Y. First use April 10, 1959.

**Rev Dust**, in capital letters, for finely-ground altered calcium-montmorillonite clay for use as an insecticide diluent. Filed Oct. 9, 1959,

by the Milwhite Co., Inc., Houston, Texas. First use Sept. 29, 1949.

**Larvatectant**, in capital letters, for insecticide. Filed June 8, 1960, by Morton Chemical Co., Chicago, Ill. First use on or about April 13, 1956.

**Spectra**, in capital letters, for chemical compound incorporated as an ingredient in the manufacture of insecticides. Filed June 21, 1960, by Geigy Chemical Corp., Ardsley, N.Y. First use April 19, 1960.

**Panik**, in capital letters, for grain fumigant. Filed Nov. 22, 1960, by Morton Chemical Co., Chicago, Ill. First use on or about Oct. 5, 1960.

**Cypress Gardens**, in capital letters, for fertilizer. Filed March 28, 1960, by Snively Groves, Inc., Winter Haven, Fla. First use Sept. 8, 1958.

### Analytical Chemists Plan Workshop at Purdue

LAFAYETTE, IND.—A workshop for analytical chemists concerned with techniques and procedures of analyzing fertilizers and fertilizer materials is scheduled for July 6-7 at Purdue University. Chemists in industry and government laboratories are being invited to attend the three-day sessions. The event is under the joint sponsorship of the Association of American Fertilizer Control Officials, the Association of Official Agricultural Chemists, and the National Plant Food Institute.

Purpose of the meeting is to familiarize chemists with recent developments in new methods for determining phosphorus in fertilizers.

Chemists wishing to register for the workshop should write to Dr. F. W. Quackenbush, State Chemist, Biochemistry Department, Purdue University, Lafayette, Ind.

### MIXING PROBLEMS

Continued from page 10

fication experienced because of the small volume of the individual bags in which the product is packed. However, the quality may be somewhat affected if the material is first discharged from the mixer into an unloading elevator then into a receiving bin and subsequently into a bag filler.

Here there is motion and handling of product, which must be done gently to prevent classification and reduction in particle size. However, the worst conditions are likely to exist where the material is elevated or conveyed a substantial distance from the mixer into a bulk holding tank. Since this is by far the most popular method employed in the average field fertilizer mixing plant, the following steps should be taken to prevent this undesirable classification:

First, it is desirable to have the entire package as compact as possible to minimize the distance the blended materials must be moved. It is desirable to have the mixer discharge directly into the receiving leg of a bucket elevator and preferably in as short a distance as possible to minimize the fall of product into the boot.

The elevator employed should be a continuous discharge type with a relatively slow belt and cup speed to effect a gentle discharge. Since it is frequently necessary to elevate the blended materials to a considerable height in order to provide space for distribution into two or more bulk holding tanks, it is desirable to have the discharge spouts from the elevator head lie at an angle as near level as is consistent with the flow characteristics of the product.

Further, baffles should be installed within the individual bulk bin compartments to slow the velocity of the product falling into the bin and minimize the tendency for ingredients to segregate.

The hopper itself should be designed to help prevent separation of product as the material flows from the bin into a bulk truck. This can be achieved through use of an internal cone or deflector located just above the discharge opening of the bulk tank so as to compel the material to flow from the sides into the discharge opening, rather than to permit a flow from the center of the material mass. This will greatly reduce the tendency toward separation.

Where the material is discharged into bulk trucks, the compartments of the trucks should be further compartmentalized through use of baffles or partitions to reduce the amount of material free to move within the confines of each bin. A considerable separation of particles can occur in a bulk truck compartment while the blended product is

being transported or applied on the customer's land. By inserting additional dividers within these compartments on the bulk truck, this particle separation or classification will be decreased materially.

It also is advisable to caution all people concerned with the handling of the product in bags to handle the bagged material as gently as possible, not only to prevent bag breakage but also to prevent a pulverizing of the ingredients with the resultant dust or fines. This applies particularly to insecticides, which generally involve a rather fragile carrier or one which is susceptible to breakage as a result of rough handling.

Here is a thumbnail summary of points to be remembered and utilized:

1. The method employed to charge the ingredients into the mixer plays an important part in the blend quality.
2. If formulas are made up of an upset ratio of ingredients, the minor ingredients or quantities should be introduced in between small portions of the main ingredients in order to achieve a more thorough disbursement in a minimum length of time.

3. The last ingredients charged into the mixer will not normally receive the same length of blending time as the first ingredients charged. To offset this, adequate time must be allowed after the completion of charging to allow the complete blending of the last ingredients charged into the mixer.

4. The blended material should be handled as little as possible after completion of the blending to reduce the possibility of stratification or separation.

5. The subsequent handling of the material should be done with a minimum of contact with moving parts and within as short a distance as possible.

6. The equipment used for the temporary holding and storage of the blended product should be designed to prevent classification or stratification of the blended product while charging, and field spreading equipment should also be designed to minimize the tendency for classification during transportation and while being applied on the fields.

### S-D Reports Earnings

NORFOLK, VA.—Smith-Douglass Co., Inc. reports net sales of \$41,999,980 for the nine-month period ended April 30. Sales for the same period in 1960 were \$40,337,557.

Net income after taxes for the nine months was \$2,170,224, compared to \$2,973,761 for the same period a year ago, according to W. Farley Powers, Smith-Douglass secretary.

### KENTUCKY FERTILIZER CONSUMPTION CONTINUES ON UPGRADE FOR 20 YEARS

LEXINGTON, KY.—Kentucky farmers increased purchases of fertilizer about five-fold in the period 1940-1960, the University of Kentucky says. Its report shows that in 1940, total fertilizer purchases in the state amounted to 117,351 tons of mixed and straight-material (such as ammonium nitrate) fertilizers. But in 1960, the total was 563,978 tons. Mixed fertilizer tonnage was about four times as much as the straight-material figure.

Bruce Poundstone, department head, in his report (taken on a five-year interval) said that in 1940 the analysis 3-8-6 (now virtually unused) was highest in tonnage with 16,912 tons. In 1945 it was 2-12-6 analysis, 49,766 tons. In 1950, 6-8-6 was tops with 102,249 tons. In 1955, the analysis 5-10-15 took the lead with 71,110 tons and in 1960 maintained it with 102,745 tons.

In the straight-materials category, the popular 20% superphosphate has been the leader all the way through except in 1960, ranging from 29,310 tons in 1955 to as high as 126,672 tons in 1950. In 1960, ammonium nitrate was the leader with 31,963 tons.

Mr. Poundstone said the 20-year figures show a definite trend toward high analysis fertilizers.

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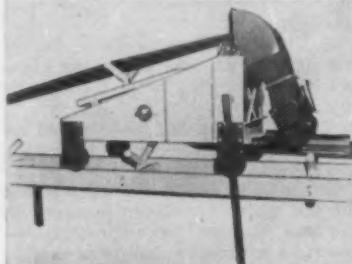
# WHAT'S NEW

## IN PRODUCTS • SERVICES • LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

### No. 9389—Belt-Propelled Tripper

Finco, Inc., announces a new reversible belt propelled tripper. The unit weighs 762 lb. and is claimed to spot the conveyed commodity at any point in a material handling system.



The manufacturers also say it can be easily set up for automatic stock piling, with various discharge arrangements. It accommodates belt sizes from 12 to 24 inches. For further information check No. 9389 on the coupon and mail.

### No. 9390—Nesting Pails

A new taper-sided steel nesting pail is available from Bennett Industries, Inc. Features include electrically-welded side seams and a standard diameter lug cover with a special locking design. The pails are available in 29, 27 and 24 gauge and may be either lithographed or painted. For complete information, including specification sheet and brochure, check coupon No. 9390 and mail.

### No. 9388—Standard Belt Conveyors

An 11-page brochure is offered by Finco, Inc., covering specifications and costs of conveyors in a wide range of sizes and to a maximum capacity of 500 TPH. Brochure contains charts on bulk material classifications, belt capacities and speeds, horsepower, angles and lengths. It also includes plan drawings of typical terminals. For brochure, check No. 9388 on coupon and mail.

### No. 9393—Compartmented Rotary Dryer

Retaining dams and adjustable skimmers are said to be features of the Standard Steel Corp.'s new compartmented rotary dryer. Adjustment of the depth of the "bite" of the skimmers, controlled from outside the dryer shell, regulates retention



time of the material in each compartment. The shell and lifters are made of polished stainless steel. For complete information check coupon No. 9393 and mail.

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- No. 9385—Spray Adjuvant Bulletin
- No. 9386—Heavy-Duty Rotary Mixer
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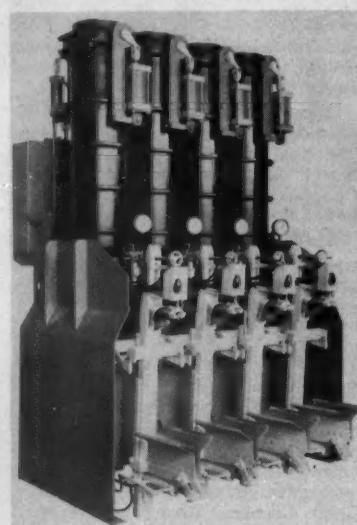
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### No. 9391—Multiwall Bag Packer

St. Regis Paper Co. is introducing a new multiwall valve bag packer called the "force flow packer," which



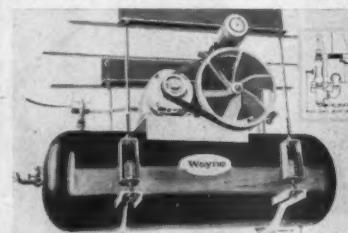
they say features a pressure chamber to densify materials and produce a tightly filled bag. The makers say the machine can handle 25 to 100 lb. sized bags and is adjustable to quick changeover to different products and bag sizes. It is available in one to four-tube models. Head room requirement for a standard machine is 7 ft. 9 1/4 in. The packer, completely pneumatic, is equipped with a poised weight control, and operation is completely automatic according to the manufacturer. For complete details check coupon No. 9391 and mail.

### No. 9385—Spray Adjuvant Bulletin

A bulletin available from Colloidal Products Corp. describes a new spray adjuvant recently introduced. The new spray adjuvant is non-ionic, water soluble and, according to Colloidal, can be used as a wetting agent, spreader, penetrant and aid to translocation. The bulletin describes what the product does, why it is used, gives rates recommended per 100 gallons of spray, and explains the technicalities of recommended rate variations. For complete information on the product, check No. 9385 on the coupon and mail.

### No. 9383—Air Compressor Pumps

Two new air compressor models are being introduced by The Wayne Pump Co., which the makers say utilize a specially designed ceiling suspension system permitting use of



larger tanks than might otherwise be possible in limited floor space conditions.

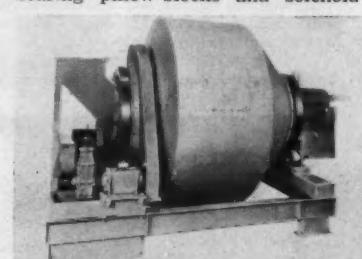
Each of the two models is supplied with an 80-gallon tank, and the entire assembly consists of a complete suspension kit. Pressure gauge, manual shutoff valves and connecting outlets are provided so that assembly will be operational as soon as it is installed, and either model can be supplied with single or three-phase motors, they state. In addition to space savings and large capacity, the manufacturers list quiet operation resulting from spring suspension isolation as a feature of the new design. For full details on the pumps, check No. 9383 on the coupon and mail.

### No. 9386—Heavy-Duty Rotary Mixer

An abrasion-resistant heavy duty rotary mixer equipped for automatic and remote control has been announced by the Munson Mill Machinery Co.

The new mixer is said to be dust-tight, leak-proof and capable of turning out a blend of many ingredients in 1 1/2 minutes, discharging clean in one minute or less.

Models range in sizes from 30 to 120 c.f. capacity. The largest can turn out six ton batches every four minutes, and precision construction provides for quiet, vibration-free operation, according to the manufacturers. Features of the equipment, the makers say, include abrasion-resistant steel, rubber, Meehanite iron, ball-bearing pillow-blocks and solenoid-



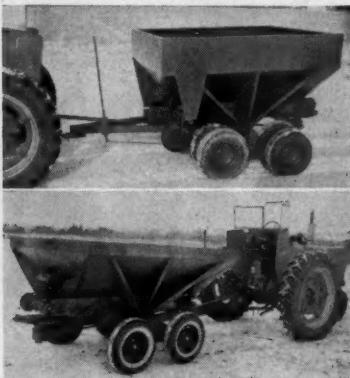
operated lubricating devices. Complete information may be obtained by checking No. 9386 on the coupon and mailing.

## No. 9384—Cleaning and Fume Control Equipment

A new 16-page brochure pictorially describing the export facilities and worldwide operations developed by Wheelabrator Corp. for metal cleaning, finishing equipment and dust and fume control equipment is now available. The company says the brochure will be especially helpful to U.S. manufacturers with overseas operations. Pictured in the brochure are a large number of overseas installations of Wheelabrator cleaning and dust control equipment in use throughout the world. To receive this detailed information, check No. 9384 on the coupon and mail.

## No. 9381—Pull-Type Fertilizer Spreaders

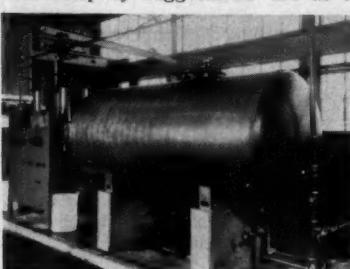
Simonsen Manufacturing Co. has added two new pull-type fertilizer spreader models to its line of fertilizer spreading equipment. Equalized axles eliminate the need for springs, say the makers. One model has four tires and a 2-ton capacity. The other eight tires and a capacity of four tons. Both are eight feet long, have



a spreading width of 50 ft. and a rate of spread from 60 lb. an acre up. The manufacturers say the new models can be operated with any tractor, and the fan is powered from the tractor PTO. For full information check coupon No. 9381 and mail.

## No. 9395—Polyester Tank

Availability of a horizontal processing tank fabricated from glass-reinforced polyester has been announced by Justin Enterprises, Inc. The company suggests its use as a



processing unit where corrosive conditions call for high chemical resistance. It is available in capacities from 50 to 10,000 gal.

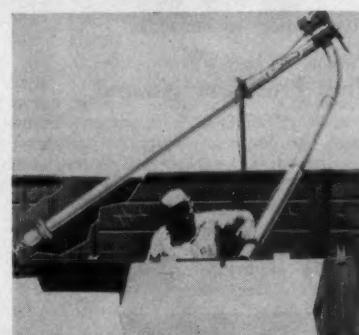
The tank is translucent, allowing easy observation of the liquid level within the tank and elimination of liquid level gauges, the makers say. For complete information check No. 9395 and mail.

## No. 9380—Plate Feeder Bulletin

Chain Belt Co. has published a new 7-page bulletin describing its Rex reciprocating plate feeders. The feeders are available in a number of sizes designed to feed a variety of materials, according to the manufacturers. The bulletin covers the company's standard line. It also lists feeder specifications and features the five types of Rex eccentrics available. For free copy of bulletin 6094P, check coupon No. 9380 and mail.

## No. 9372—Battery Powered Truck Unloader

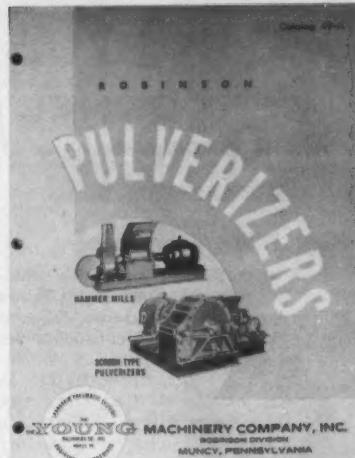
A new battery powered truck unloader which the makers state converts any dump or hoisting truck into a self-unloading unit, has been marketed by Wyatt Manufacturing Co. The makers claim it is an effec-



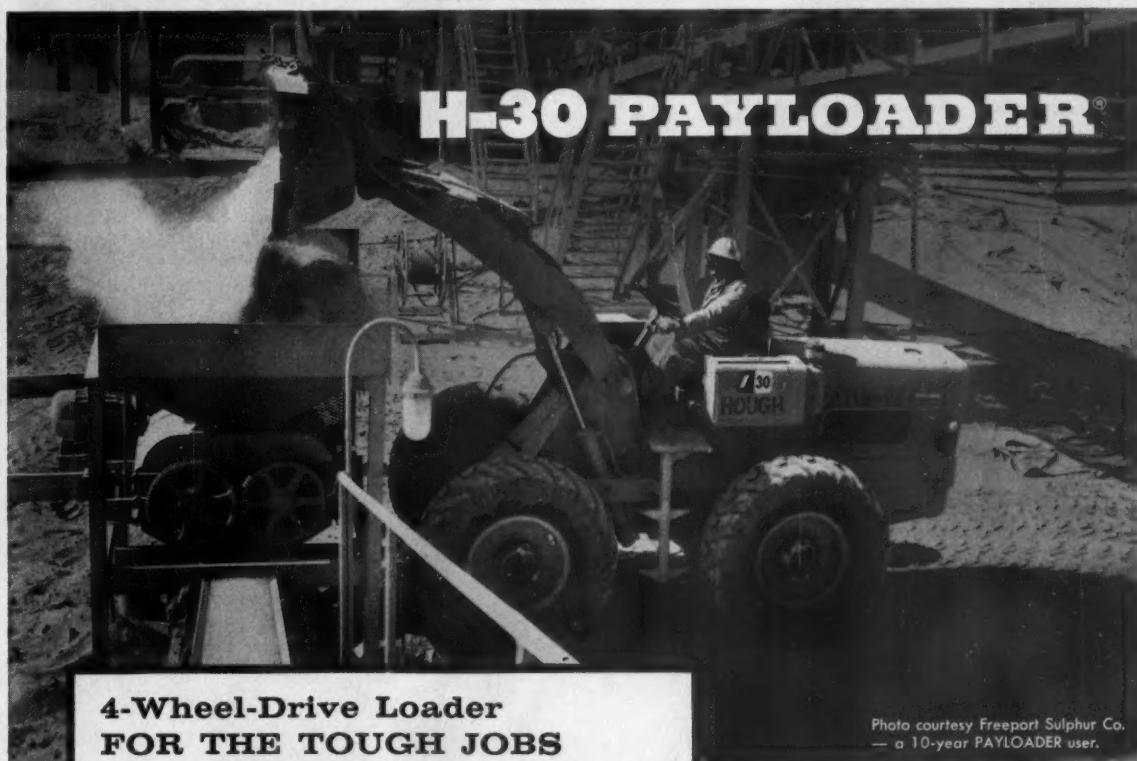
tive means of unloading fertilizer. The 4-in. diameter unloader operates from a 12-volt truck battery. Starting and stopping the unit is controlled by a push-button switch at the end of the spout. The unloader has a 10-ft. auger drive section and a 12-ft. telescoping spout joined to the drive auger by a flexible section which the makers say permits a full 180° swing in any direction. For complete details, check No. 9372 on the coupon and mail.

## No. 9379—Hammer Mills and Pulverizer Catalog

An 8-page, well-illustrated technical catalog on the complete line of heavy duty hammer mills and screen type pulverizers is announced by The Young Machinery Co., Inc. Its bulletin "49-A" presents illustrations and cutaways on a variety of models and includes detailed dimension tables. A special insert shows a closeup of perforated and wedge-wire screens



and of both bar and knife type hammers, with application details. For copy of catalog check coupon No. 9379 and mail.



## 4-Wheel-Drive Loader FOR THE TOUGH JOBS

The Model H-30 was introduced a year ago and has been so successful that many owners have already purchased additional units. Although it is the smallest 4-wheel-drive PAYLOADER, it has an operating capacity of 3,000 lbs. and the latest improvements and features found in the larger models—is way ahead of all other loaders near its size.

**Traction and Digging Power:** 77½ h.p. gasoline or 71½ h.p. diesel engine and 4-wheel drive on big 12:00x24 tires, plus torque-proportioning differentials, give it outstanding digging and go power indoors or out.

**Fast, Safe and Easy Operation:** Full power-shift transmission plus torque converter give 3 speed ranges in each direction up to 25 m.p.h.; instant on-the-go fingertip shifting (no foot clutch); power-steer; safety boom arms (all moving parts ahead and clear of the operator); sealed 4-wheel brakes (hydraulic) give positive braking and low maintenance; "operator's choice" dual brake pedals permit braking with and without transmission engaged.

**Fullest Operator Visibility:** Simplified boom design and slope-down front end let operator see the bucket action at all times and give him excellent all-around visibility.

**Easy Servicing, Low Maintenance:** Battery, engine and other points easily accessible; sealed, pressurized hydraulic system plus double filtering.

**The Tougher Your Bulk-handling requirements, the more you need PAYLOADER dependability.** A Hough Distributor is ready to give you complete data on the H-30 or any other of the 20 models—from 2,000 to 12,000 lbs. capacity. He also has the finest service in the rubber-tired loader industry.

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trademark names of The Frank G. Hough Co., Libertyville, Ill.



A Fork Lift Attachment is available for the H-30—6,000 lbs. capacity and lifting heights up to 21 ft.

# HOUGH®

**THE FRANK G. HOUGH CO.**  
LIBERTYVILLE, ILLINOIS  
SUBSIDIARY INTERNATIONAL HARVESTER COMPANY

**THE FRANK G. HOUGH CO.**  
970 Sunnyside Avenue, Libertyville, Ill.

Send data on H-30 PAYLOADER  
 Send data on other models and attachments

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

6-8-3

# INDUSTRY PERSONNEL NEWS

## New Process Engineer

LOS ANGELES—David W. Goldsmith has joined United States Borax & Chemical Corp. at Boron, Cal., as senior process engineer. It is announced by Dr. D. S. Taylor, vice president in charge of the firm's technical department.

Mr. Goldsmith was previously associated with American Potash & Chemical Corp., Potash Company of America and Kaiser Aluminum and Chemical Corp.

He is a graduate of the University of Texas with a B.S. degree in chemical engineering, and served in the U.S. Navy during World War II.

## To Tech Sales Post

BOUND BROOK, N.J.—Chipman Chemical Co., Inc., has appointed Warren W. Brooks as sales representative and technical advisor for its St. Paul, Minn., district. He will be active in railroad, industrial and agricultural sales.

Mr. Brooks formerly was supervisor of wood preservation, national pole and treating division of Minnesota and Ontario Paper Co. He attended Pasadena Junior College and the University of Minnesota.

**You can SEE and FEEL its superiority**

## MFG FERTILIZER HOPPER

**Glass-smooth, seamless unit . . .** has molded-in color; never needs paint; won't rust or corrode from wear or weather.

**Translucent . . .** reveals level of contents at a glance.

**Durable . . .** withstands impact and abrasion of dry mixes. Stronger than steel, pound for pound. Easily repaired if it ever is damaged.

Special sizes and shapes can be custom molded for your specific needs. Write for details.

## Research Agronomist

NEW YORK, N.Y.—American Cyanamid Co. has appointed Dr. D. D. Bondarenko research agronomist for its Agricultural Division, according to C. D. Silverd, division general manager. Dr. Bondarenko reports to the director of plant research, Dr. F. L. Stark, and will be involved primarily with screening and development of new herbicides. **D. D. Bondarenko**

Before joining Cyanamid in April of this year, Dr. Bondarenko held a teaching position at Ohio State University. He also conducted research work on herbicides for the Ohio Agricultural Experiment Station.

Dr. Bondarenko obtained his Ph.D. in agronomy from Ohio State University in June, 1957, and received his master in agronomy from the University of Illinois in January, 1955.

## Hayes-Sammons Elects

MISSION, TEXAS—Thomas B. Sammons, Jr., has been named secretary of Hayes-Sammons Chemical Co., in addition to his responsibilities as chairman and chief executive officer of the company. He was named to his new position by recent action of the company's board of directors.

Another personnel change in the firm includes the election of Cornelius Venderulis, senior vice president, who was named treasurer. Mr. Sammons and Mr. Venderulis replace Edward H. Metz, who resigned, according to Claborne B. Brazeal, president. The Hayes-Sammons company produces agricultural and oil industry chemicals.



D. W. Goldsmith

## Becomes Comptroller

ST. LOUIS, MO.—Thomas K. Warner has been elected comptroller of Bemis Bro. Bag Co., it was announced on May 18 by Judson Bemis, president. He was to join the company at its St. Louis headquarters offices on June 1.

Mr. Warner was formerly associated with Price Waterhouse, certified public accountants.

## Vice President Named

NEW YORK—International Fertilizer Development Corp., an affiliate of International Ore & Fertilizer Corp., 500 Fifth Ave., New York, has announced the appointment of Christopher J. Pratt, as vice president in charge of operations.

Mr. Pratt, a native of England, is a graduate of the Rutherford College of Technology and Goldsmith College, both affiliated with London University, London, England. He was formerly a senior business consultant with Ebasco Services, New York, N.Y.

Mr. Pratt is a chemical engineer and has been associated with Dorr-Oliver, Inc., Stamford, Conn., as project engineer, specializing in the design of plants for the manufacture of fertilizers and heavy chemicals.

He is the author of numerous articles relating to industrial plant operation and maintenance, and is a co-author with Dr. Vincent Sauchelli of "Chemistry and Technology of Fertilizers."



C. J. Pratt

## Retires from DuPont

WILMINGTON, DEL.—Chester E. Graves, manager of the Palo Alto, Calif., biochemicals sales district of the Du Pont Co.'s Industrial and Biochemicals Department, will retire July 1, 1961, after 32 years with the company.

He has represented Du Pont on the West Coast for the past 16 years. Jack R. Nail, export sales manager of the department and formerly in sales work in the West, will return to Palo Alto and assume the duties of district sales manager.

Mr. Graves joined the Organic Chemicals Department of the company in 1929 as a plant pathologist.



Chester E. Graves

## Ortho Research Appointment

RICHMOND, CAL.—Leo R. Gardner, vice president and manager, research and development department, has just announced the appointment of Dr. L. L. Pechuman to a new position in research and development with the Ortho Division of California Chemical Co.

A graduate of Cornell University with B.S. and M.S. degrees, Dr. Pechuman was granted his Ph.D. in 1939 in entomology, vertebrate zoology and ecology.

Before joining Ortho in 1939, Dr. Pechuman worked with Boyce Thompson Institute for Plant Research and also had teaching experience at Cornell. Maintaining his scientific interests and study, Dr. Pechuman has to his credit over 40 technical papers published in 18 scientific journals.



Dr. L. L. Pechuman

## New Sales Executive

BENTON HARBOR, MICH.—Appointment of Fred Dolton as manager of national account sales for the "Michigan" line of construction machinery has been announced by A. E. York, sales manager, construction machinery division of Clark Equipment Co.

Mr. Dolton's new duties include coordination of sales between Michigan construction and bulk materials handling equipment distributors throughout the nation and the national account sales force. His headquarters remain in New York.

Prior to this assignment, Mr. Dolton was national account sales representative for the construction machinery division of Clark.

## Retires from Davison

BALTIMORE, MD.—William Caspari, Jr., general sales manager, agricultural chemicals, of W. R. Grace & Co. Davison Chemical Division, was honored by one hundred friends and associates from many parts of the U.S. and Canada, May 19, at a dinner in the Sheraton Belvedere Hotel, Baltimore. The event was in connection with his retirement on May 31 after 44 years of service with Davison, the only company for which he ever worked. Though retiring from active duty, he will continue with the company in a consulting capacity.

A native of Baltimore, Mr. Caspari attended schools there and was graduated from City College with the class of 1915.

Upon graduation he joined Davison Chemical Co. in the chemistry laboratory. He returned to the company after a tour with the Army in 1918, having been commissioned a second lieutenant.

After a tour of duty for Davison in Cuba he returned to Baltimore and was instrumental in the organization of Davison's export department. In connection therewith he has traveled extensively in Latin America, Canada and Europe as well as the U.S.

During World War II Mr. Caspari served on several sulphuric acid and superphosphate committees of the government's War Production Board. He has often been referred to in the agricultural chemicals industry as "Mr. Superphosphate."

## Tech Service Appointee

HAGERSTOWN, MD.—Central Chemical Corp., Hagerstown, Md., has announced the appointment of Frank B. Springer, Jr., as technical service representative for the firm. Mr. Springer succeeds W. T. Brown who has been assigned a sales territory including the states of Maryland, Virginia, and West Virginia, for Central Chemical. Mr. Springer was formerly assistant agronomist at the University of Delaware. In his new assignment, he will assist all ten of Central Chemical's sales offices in experimentation and promotion of the firm's line of "Farmrite" products.



Frank B. Springer



MOLDED FIBER GLASS BODY COMPANY

4643 Benefit Avenue • Ashtabula, Ohio





D. R. Fraser

J. H. D. Ross

### New President Named For Chipman Chemicals, Ltd.

HAMILTON, ONT.—D. R. Fraser has been appointed president of Chipman Chemicals, Ltd., with head office at Hamilton, Ont., it has been announced by W. H. Moyer, chairman of the board. Mr. Fraser succeeds J. H. D. Ross who has retired from the company.

A graduate of McGill University where he obtained a master of arts degree in economics, Mr. Fraser joined the accounting department of Canadian Industries, Ltd., at Montreal in 1939 and since then has held a number of administrative posts in various service departments of the company, becoming traffic and customs manager in 1953. Subsequently, he was appointed sales manager of the textile fibres division and, in 1958, was named manager of C-I-L's Millhaven, Ont., works which consist of the "Terylene" and anhydrous ammonia plants. Last December he was appointed vice president of Chipman.

During World War II Mr. Fraser served overseas with the Canadian Army, holding the rank of captain. He served as a member of the national executive council of the Canadian Manufacturers Assn.

Chipman Chemicals, Ltd., is an associate company of C-I-L and the Chipman Chemical Co., Inc., in the U.S.A. In addition to manufacturing pesticides, it is engaged in extensive railway weed spraying operations.

### H. V. Howes, Bemis Vice President, Retires

ST. LOUIS, MO.—H. V. Howes, vice president and director of sales of Bemis Bro. Bag Co. and one of the architects of the packaging industry's development of the past few decades, retired May 30. He plans to continue as a company director.

Mr. Howes' 40-year career with Bemis paralleled the transition from the earliest days of individual grocery store products put-up in the brown paper bag to today's style of package forms and materials.

His successor was to be announced shortly.

The retiring executive joined Bemis in 1920 as a traveling auditor. His headquarters were in St. Louis, which has been his only location throughout his service with the company.

Five years later, Bemis established a new purpose department, composed of Mr. Howes and a stenographer. Its function was finding new uses for bags. Later from 1928 to 1943, it became known as the "trade extension department," and later still, the general sales department. It now has a staff of 40 people and encompasses sales development and sales management, with sub-divisions of advertising, market research, trade extension, pricing, and product supervision.

Mr. Howes has been in charge of the department from its inception. In 1942, he was named director of sales for the company, and has served as a director since 1941. In 1946, he was elected a vice president.



H. V. Howes

### Penick Shifts Salesmen

NEW YORK—S. B. Penick & Co. has announced the appointment of William F. Lacey as sales representative for Brooklyn, Long Island, and Staten Island, N.Y. Mr. Lacey, who joined Penick in 1955, formerly served in an inside sales capacity. He holds a bachelor's degree in chemistry from the College of the City of New York.

F. X. McCormack will represent Penick's Botanical and Allied Products Division and Farm Chemical and Insecticide Division in the South Jersey - Pennsylvania-Maryland-Delaware-West Virginia and Washington, D.C. territory. Mr. McCormack, a graduate of the Massachusetts College of Pharmacy, had represented Penick in upper New York state for the past twelve years.

F. J. Cevas will continue to represent Penick's NYQ Chemical Division in the same area as Mr. McCormack.

### Named Sales Manager

BALTIMORE, MD.—William M. Rohrer has been appointed general sales manager, agricultural chemicals, by W. R. Grace & Co. Davison Chemical Division, it has been announced by D. N. Hauseman, vice president of the division.

In his new position, Mr. Rohrer will be responsible for the sales of "Hi-Flo" triple superphosphate, Florida phosphate rock, diammonium phosphate, normal superphosphate, phosphoric acid and sulphuric acid.

Originally from San Francisco, Mr. Rohrer attended schools in Bronxville, N.Y., and Deerfield Academy at Deerfield, Mass. After a tour of duty in the U.S. Air Force he was graduated in 1947 from Yale, majoring in



Wm. M. Rohrer

industrial administration. Upon graduation, Mr. Rohrer joined Grace and has been with the organization for 14 years.

After a number of assignments with the parent company, he came to the Davison division in 1954, first in purchasing, later in domestic sales of triple superphosphate and export sales of agricultural chemicals. In 1960 he was named assistant general sales manager, agricultural chemicals.

In his new post he succeeds William Caspari, Jr., retired from active duty but continuing in a consulting capacity.

### To New Canadian Post

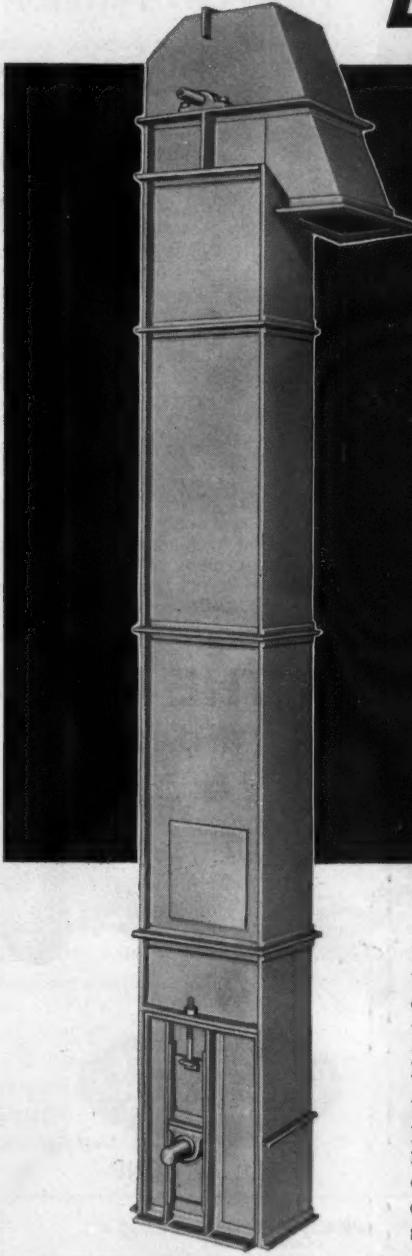
NEW YORK—Burton F. Bowman, assistant general manager of American Cyanamid Co.'s agricultural division, has been elected president of Cyanamid of Canada, Ltd., effective July 1. Cyanamid of Canada is a

Turn to PERSONNEL NOTES page 48



*for continuous*

# LOADABILITY!



Engineers who specify conveying systems today demand quality—equipment proven to speed processing and maintain continuous material flow. They look beyond price to design and craftsmanship. An Ehrsam bucket elevator adapts to existing equipment for easy installation. Dramatically increases productivity. Ehrsam frees you from critical design and fabrication costs and bears the responsibility for efficient operation throughout its useful life. Behind quality is management's "no-orphan" policy... Ehrsam refuses to abandon one piece of equipment in productive use. Ehrsam supplies a wide range of products to fit your material flow pattern... at your desired pace... for increased profits. Call one of the seven district offices below for complete information.

**The J. B. EHRSAM & SONS MANUFACTURING CO.**

ENTERPRISE, KANSAS

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**Popular Project . . .**

# Scouting Program Proves Goodwill Maker for Firm

WICHITA, KANSAS—Personnel of the Frontier Chemical Co. have directed a considerable amount of civic attention and public good will toward the company through sponsorship and active participation in the Explorer Scouting movement. Among these are F. E. Lamson, an industrial engineer for Frontier; R. B. Morris, control manager; G. A. Robbins, plant manager, and J. T. Kolins, a department superintendent.

The activity revolves around a program wherein industry, professional organizations, law enforcement divisions and similar groups sponsor Explorer posts to serve young men of high school age with a program slanted at vocational guidance in the field in which the sponsoring institution would have particularly capable personnel and applicable facilities. Thus it was that Frontier Chemical Co. became a sponsor and has taken an active part in these youth activities.

Frontier's program is built around the vocations of chemistry and chemical engineering. The subject is viewed from the standpoints of its vocational aspects; service; social; citizenship; out-of-doors activities and physical fitness.

G. A. Robbins, plant superintendent, commenting on the program, said that it has proved to be of value to young men in helping them to decide on vocations before they enter college, thus avoiding the possibility of their having to make changes in courses of study or realigning professional aims after the career in higher education has begun.

A recent article in a Wichita newspaper gave the Frontier company good press on its work with some 60 high school scientists. The course of study, the paper said, includes frequent field trips through the plant to study operations. Mr. Robbins added: "We are prepared to go as deep

into this thing as the boys' interests will carry them."

Frontier manufactures a number of agricultural chemical products, and in addition, caustic soda, chlorine, muriatic acid, and chlorinated solvents.

Responsibilities taken on by Frontier personnel include that of institutional representative, by F. E. Lamson; Explorer adviser, by R. B. Morris; and chairman of the post committee, by J. T. Kolins.

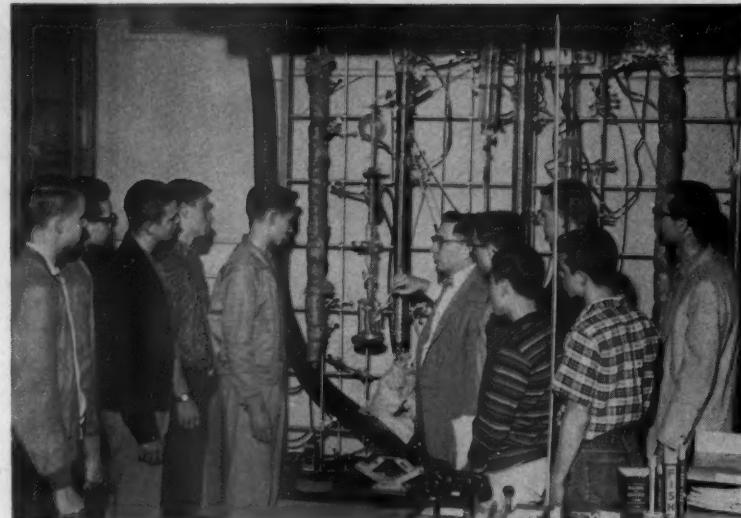
## Diversification Program Described by Texas Gulf

NEW YORK—Texas Gulf Sulphur Co. has launched a diversification program which is expected to increase its earnings by at least \$5,000,000 a year, Claude O. Stephens, president, told the New York Society of Security Analysts recently.

Declaring that his estimate is "a conservative one," Mr. Stephens said that this net income was expected to result from Texas Gulf's new potash mine, now under construction in Utah. He said that, based upon thorough tests, "we believe this to be the richest known potash reserve in the United States."

Mr. Stephens said that the \$30,000,000 potash project is expected to be financed "entirely from retained earnings." As of the end of the first quarter, Texas Gulf had cash reserves of \$35,000,000.

Mr. Stephens said that he was also "optimistic about the future of the company's sulphur operations," based upon the growing free world demand. He said that his company has reserves "sufficient to supply foreseeable demand," but even so, his company is continuing its "endless search for new and ever better sources."



**SCOUTING PARTY**—Members of Explorer Scout Post receive instructions from John Rains, Frontier Chemical Co. counselor, in center. Frontier was sponsor of group of Wichita, Kansas young men interested in the chemical industry as a career. Mr. Rains talked to them on principles of fractional distillation at the Frontier plant. The boys made frequent study tours of the plant during their course of instruction.

## International Minerals & Chemical Plans Three-Day Fertilizer Management Seminar

SKOKIE, ILL.—International Minerals & Chemical Corp. will sponsor a three-day fertilizer management seminar this summer, to help manufacturers solve problems in several broad areas of administration, production and marketing. The seminar is scheduled to be conducted July 19-21 at the IMC headquarters at Skokie, Ill. Some 65 plant food executives are expected to attend the seminar, the company says.

The sessions will be built around ten topics of executive concern including administrative management, financial management, insurance, purchasing, transportation, personnel development, public relations, marketing, production, and future growth possibilities.

IMC says the program will be built around hypothetical fertilizer company and will study and find solutions for typical problems encountered by the management of such a firm. A full-scale report on the simulated company, including financial data,

will be sent for advance study to those attending the seminar.

IMC has announced that John Baker, director of Agriculture Credit Services, U.S. Department of Agriculture, will address the group at a banquet meeting on July 20. His topic has been announced as "The Administration's Agricultural Policy and Program."

Format of this year's seminar is patterned after the three-day event of last summer which was attended by some 55 fertilizer company executives representing a broad area of the country.

The seminar is an outgrowth of the two series of sales training clinics for customers' personnel conducted by IMC in a program for bringing the most modern marketing weapons to the attention of the fertilizer industry.

Some of those attending the earlier clinics suggested the need for a concentrated management training meeting as the next logical step in IMC's customer service program. These suggestions were further endorsed in comments by IMC's 12-member Fertilizer Industry Advisory Panel.

IMC says that each topic discussed at the seminar will be explored in a 30-45 minute presentation by company officials and members of their staffs. Following such presentations, a 10-15 minute period will be thrown open for questions and answers on problems pertaining to the subject discussed.

## Dave Lynch Named Vice President by Vulcan

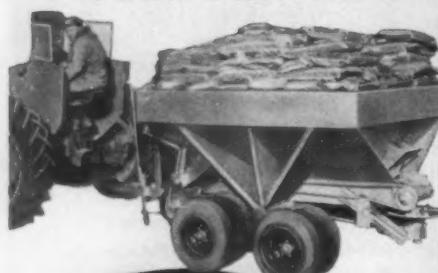
BIRMINGHAM, ALA.—David W. Lynch has been elected vice president—sales, of Vulcan-Associated Container Companies, Inc., Birmingham. Mr. Lynch has been serving as general sales manager. Previously, he was active in the sale of basic insecticides and chemicals to the pesticide and sanitary supply industries.

Vulcan has seven steel container plants serving the insecticide, chemical and other industries. Plant locations are Bellwood, Ill.; Birmingham, Ala.; Dallas, Texas; San Leandro, Cal.; Peabody, Mass.; Toronto, Ont. and Vancouver, B.C., Canada.



David W. Lynch

## COMPACT AND BUILT TO CARRY THE LOAD FULL EQUALIZED AXLES—NO SPRINGS TO BREAK



**MODEL N-48  
FERTILIZER  
SPREADER**

### SPECIFICATIONS

8 tires  
Length—8 ft.  
Capacity—4 tons  
Width of Spread—50 ft.  
Rate of Spread—60 to 350 lbs. per acre  
(gearing for higher or lower spreading rates, optional)

### WRITE, WIRE OR PHONE COLLECT

for further information about the N-48 and N-28 pull-type spreaders, plus a full line of other bulk fertilizer spreaders and bodies, bulk feed bodies, bulk and sack bodies and unloaders.

## CARRIES 5 TONS EASILY!

Both the 4 ton Model N-48 and the 2 ton Model N-28 are shown overloaded with 5 tons of bagged fertilizer to prove load carrying capabilities.

- Stainless steel metering gate and guides, micro-meter adjusting screw and full 12" stainless steel conveyor.
- Adequate flotation for soft fields.
- Less cutting and packing fields.
- Direct PTO fan drive gives 50 ft. spread.
- All-weather wheel drive assembly.
- Endgate in full view for easy metering gate adjustment.
- Can be pulled by any tractor.



**MODEL N-28  
FERTILIZER  
SPREADER**

### SPECIFICATIONS

4 tires  
Length—8 ft.  
Capacity—2 tons  
Width of Spread—50 ft.  
Rate of Spread—60 to 350 lbs. per acre  
(gearing for higher or lower spreading rates, optional)

**SIMONSEN MANUFACTURING CO.**

Dept. CL

QUIMBY, IOWA

Phone 72



## NEMATODE QUARANTINE MEANS BUSINESS

JONESBORO, ARK.—That quarantines against the soybean cyst nematode mean business, was found out rudely by a construction firm recently when the company was fined a total of \$150 on two alleged violations. When tried before a Federal court at Jonesboro, the president of the construction firm pleaded guilty to one count and nolo contendere to the other, but was fined \$50 on each count. The superintendent pleaded likewise in the trial. He was fined \$25 on each count.

The charges were the result of the company's having moved machinery from the quarantined area to non-infested areas without having the equipment cleaned and inspected by the U.S. Department of Agriculture, as called for under quarantine regulations. This case was the first conviction in the violation of the cyst nematode quarantine program in Arkansas.

## Central Farmers Officials Resign from Company

SODA SPRINGS, IDAHO — Central Farmers Fertilizer Co. here reports that it has accepted the resignations of three officials in its phosphate works at Georgetown, Idaho.

The company also said that it plans a reduction from 385 to 330 in the work force at the Idaho facility. A spokesman said the reduction was being made "strictly to reduce the cost of the operation."

No reasons were given for the resignations of W. T. Tillotson, works manager; Donald Anderson, head of the mining department, and Nathan Weber, maintenance department head.

A. M. Worrall was named acting works manager when the resignations became effective.

## Proposed Phosphate Plant for Montana

DEER LODGE, MONT.—The Consolidated Mining and Smelting Co. of Canada is studying the possibility of constructing a \$4,000,000 phosphate plant near here, reports Fred E. Burnett, vice president of Montana Phosphate Products Co., a subsidiary of the Canadian firm.

Mr. Burnett accompanied Governor Donald Nutter to British Columbia recently to discuss the proposed plant with the officials of the owning company.

## EXTREMES IN WEATHER HURT SOUTHERN FARMING

STATE COLLEGE, MISS.—Mississippi's farming situation near mid-June varies from "too dry" in some areas to "too cool and wet" in others, according to county agents of the agricultural extension service.

In Noxubee County, dry cool weather is discouraging growth of crops and encouraging insects, said R. A. Anderson, county agent at Macon. "Some farmers are having trouble getting a stand of soybeans and sorghum," he added.

In Franklin County, rainfall has been extremely light for the past three weeks and pastures are showing a need for moisture, said John Cox, county agent at Meadville.

Some late corn is being planted. Older corn is being laidby. Cold weather delayed growth of all crops and pastures.

Tick and hornfly infestations are the heaviest in several years, Mr. Cox stated. He urged farmers to spray or dip cattle and keep backrubbers charged.

## Diamond Alkali Merger Depends on Shareholders

CLEVELAND, OHIO — Diamond Alkali Co., Cleveland, may merge with Chemical Process Co. and Bessemer Limestone & Cement Co., depending upon the approval of Diamond's shareholders who will vote on the move at a meeting Aug. 15.

The Diamond shareholders will be asked to authorize issuance of 500,000 shares of no par preferred stock in place of 250,000 shares of existing Diamond \$100 par.

## Oregon Fertilizer Sales Up

SALEM, ORE.—A total of 51,817 tons of fertilizer were sold in Oregon during the first quarter of 1961, according to inspection fee reports to the state department of agriculture. This is an increase of some 7,000 tons more than was sold during the same period last year.

Sales of agricultural lime totaled

5,294 tons during January, February and March of this year, as against 2,617 sold last year.

A much smaller increase was reported on sales of agricultural minerals with 6,486 tons sold, topping 1960 sales for this period by only 884 tons.

## New Fertilizer Facility Planned for Ohio Site

KENTON, OHIO—The Green Belt Chemical Co., fertilizer manufacturer, has announced plans to build a new plant at St. Marys, Ohio. The firm, with headquarters in St. Paris, has plants in five locations: St. Paris, New Bremen, South Solon, Ohio; and Bryant and Fairmont, Indiana. A soil testing laboratory is located at St. Paris.

M. K. Miller, president, said the new plant is expected to be completed about the end of September, this year.

## Pesticidal Production

### Improves in March

### Over February Figures

WASHINGTON — Production of seven pesticidal products in March, 1961, scored higher tonnages than were recorded in February, 1961, according to report issued by the U.S. Tariff Commission. The figures were released as part of the "Facts for Industry" series. Pesticidal products were produced as follows for February and March, 1961, respectively:

**DDT:** 13,428,205 lb. and 16,047,720 lb.

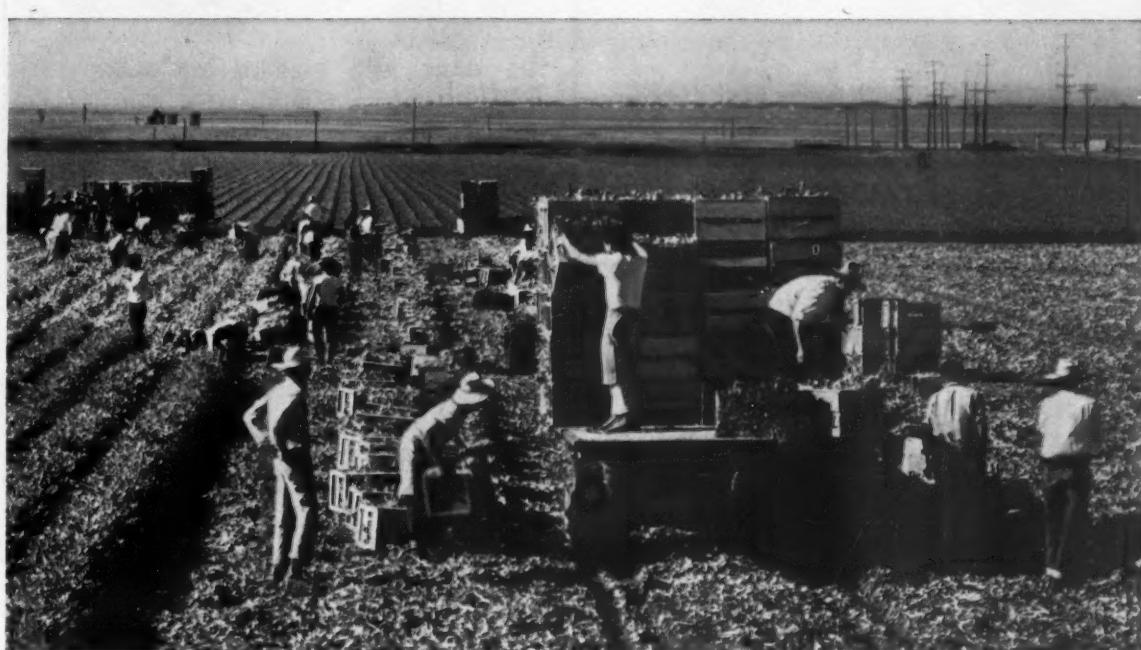
**2,4-D Acid:** 2,929,477 lb. and 3,876,234 lb.

**2,4-D acid esters and salts:** 2,216,136 lb. and 3,367,102 lb.

**BHC (including Lindane):** 3,418,111 lb. and 3,458,831 lb.

**Gamma isomer content of hexachlorocyclohexane:** 906,879 lb. and 985,366 lb.

**2,4,5-T:** 479,212 lb. and 625,468 lb.



You can harvest many vegetables 24 hours after a Phosdrin application.

## VEGETABLES:

Now—**Phosdrin® Insecticide** lets you control destructive insects on many vegetables as late as 24 hours before harvest without creating a residue problem

**Phosdrin is the remarkable phosphate insecticide that gives you fast knockdown and kill of the toughest insects—then disappears without leaving any residue. Here are the details:**

**A**LATE SEASON insect build-up can quickly make many vegetable crops unsalable. If the infestation is controlled with an insecticide that leaves excess residue on the crop at

harvest, it is still unsalable.

This is a problem that many vegetable growers are solving with Phosdrin Insecticide. It kills the toughest insects fast, usually within a few minutes of

application. However, unlike most other insecticides, Phosdrin disappears rapidly after it has done its job, leaves no residue.

That is why Phosdrin can be applied up to 24 hours from harvest on many vegetables. See table for more complete interval data.

Phosdrin is available as liquids and dusts from your local insecticide dealer under many well-known brand names.

Shell Chemical Company, Agricultural Chemicals Division, 110 West 51st Street, New York 20, New York.

ACCEPTED INTERVALS FOR PHOSDRIN INSECTICIDE							
CROP:	BEANS, ONIONS	CARROTS, EGGPLANT, PEPPERS	BROCCOLI CABBAGE & ONION	BRUSSELS SPROUTS, CAULIFLOWER, COLLARDS, KALE, CELERY, BEETS (INCL. TOPS)	CANTALOUPE, HONEYDEW MELONS, MUSKMELONS, SUMMER SQUASH, WATERMELONS	CUCUMBERS, PEAS, TOMATOES, POTATOES	LETTUCE
Days between last spray and harvest	1	2	1	3	1	1	2

**Shell  
Chemical  
Company**



Agricultural Chemicals Division

## PERSONNEL NOTES

Continued from page 45

wholly-owned subsidiary of Cyanamid with headquarters in Montreal, Quebec.

A native of Creston, Iowa, Mr. Bowman joined Cyanamid as general sales manager of the fine chemicals division in 1954, was named marketing director of the agricultural division in 1958 and assistant general manager of that division in 1960.

Mr. Bowman is a graduate of the University of Iowa. Before coming with Cyanamid, he was with the Pillsbury Co.

### Niagara Adds to Staff

MIDDLEPORT, N.Y.—Niagara Chemical Division of Food Machinery and Chemical Corp. has appointed Dr. Titus Johnston to its field re-

search staff at Jackson, Miss., according to Dr. Robert L. Gates, director of research.

Dr. Johnston, a plant pathologist, will be concerned primarily with the screening of new fungicides in field trials. For the past two years he was in charge of Niagara's pathology laboratory at Middleport, N.Y.

### Gilman Promotes S. Posen

NEW YORK—Howard Gilman, executive vice president of Gilman Paper Co., has announced the promotion of Simon Posen to vice president in charge of special assignments. Mr. Posen joined Gilman in 1949 as director of the New York technical department. He has functioned in the company's expanded manufacture of

pulp and converted products, and in company-customer relations.

Stuart Bergman, for the past six years assistant director of the technical department, has been promoted to director of technical services.

The Gilman Paper Co. operates integrated mills and converting plants at Gilman, Vermont and St. Marys, Ga. Its headquarters are in New York.

### New Division Manager

PITTSBURGH, PA.—Appointment of J. Earl Burrell as vice president of operations for the chemical division of Pittsburgh Plate Glass Co. has been announced by Joseph A. Neubauer, vice president and general manager of the division.

Mr. Burrell had served as general manager of operations since 1958 and previously had been assistant to the vice president, operations.



Burton A. Burquest

## Books on Fertilizers And Their Use

### USING COMMERCIAL FERTILIZERS—Second Edition

By C. Malcolm H. McVickar, chief agronomist, California Chemical Co., formerly chief, Agronomic Education, National Plant Food Institute

Covers advances in fertilizer technology, manufacturing processes, and techniques of fertilizer application which have contributed to more efficient agricultural production in the nine years which have elapsed since the first edition. New fertilizer materials, their manufacturing processes and agronomic merits, are discussed in this book. An entire chapter is devoted to liquid fertilizers. New chapters covering special uses of fertilizers, mixtures with pesticides, fertilizer-moisture relationships, and the economics of fertilizers have been added. Two new chapters on "Chemical Sources vs. Organic Sources of Plant Nutrients" and "Lease Arrangements Involving Fertilizer Use" offer a more complete picture of fertilizers in present-day agricultural operations. Dr. McVickar tells in this easy to read book how to build profits, and how to achieve the increased production needed now and in the years ahead by our growing population. \$4.75  
1961. 286 pages, 48 tables, 115 illustrations....

### FUNDAMENTALS OF SOIL SCIENCE—Third Edition

By C. E. Millar, late Professor Emeritus of Soil Science; L. M. Turk, director; and H. D. Foth, associate professor of soil science, Michigan State University.

This text completely revises and brings up to date the second edition. Special attention is given to progress made in the basic principles of soil science since the publication of its predecessor. This edition includes more emphasis on soil texture and the concept of the texture profile, more discussion of the influence of the soil forming factors on soil development, and more facts about clay minerals to provide a clearer understanding of the differences in the behavior of soils. 476 pages, illustrated. 6x9 1/2".... \$7.75

### SOIL FERTILITY AND FERTILIZERS (1956)

Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following a background course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reaction to these nutrients. Several chapters on manufacture, properties, and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management programs. Dr. Tisdale is Southeastern regional director of the National Plant Food Institute and Dr. Nelson is with the American Potash Institute. 430 pages, cloth bound..... \$8.00

### PRODUCING FARM CROPS

By Harold K. Wilson, late Professor of Agronomy and A. Chester Richer, Professor of Soil Technology, Pennsylvania State University.

Just off the press is this comprehensive and down-to-earth textbook on how to raise farm crops economically, scientifically, and profitably. Written in easy-to-read and straightforward style, and combining the knowledge of a crops specialist and a soils specialist, this book brings you the latest developments in the science and technology of producing farm crops. Although written for the use of agricultural students primarily, the book has been kept free of the tedious characteristics commonly associated with textbooks; practicing farmers will find it of as much value as do students. Broadly conceived, dealing not only with the entire field of crop production and its immediate relationships with the sciences of agronomy, botany, entomology, and agricultural economics, but also with the relationship of crop production to farm management and to the agricultural industry as a whole. 336 pages, 137 illustrations..... \$5.75

### THE CARE AND FEEDING OF GARDEN PLANTS

Published jointly by the American Society for Horticultural Science and the National Plant Food Institute.

An entirely new, one-of-a-kind book, it is designed to acquaint readers with nutritional deficiency symptoms or "hunger signs" of common yard and garden plants, including lawn grasses, shrubs, flowers, garden vegetables, and cane and tree fruits. It stresses plant "feeding," or "what makes plants grow." Sixteen of the nation's leading horticultural authorities collaborated in its preparation. Cloth bound, 300 pages of text and illustrations including 37 pages in full color..... \$3.00

### FREEDOM TO FARM

By Ezra Taft Benson

Published July 15, 1960. A highly informative, readable source book for every person interested in the farm question—a controversial and important statement by a leading figure of his times. A major part of the book is the history of America's attempts to solve the farm problem. Calling for a reassessment of the farm situation in the light of present-day reality, the author presents a five-point program that he believes can solve the farm problem without the expenditure of billions of taxpayers' dollars. 239 pages, cloth bound..... \$3.95

### ECONOMIC AND TECHNICAL ANALYSIS OF FERTILIZER INNOVATIONS AND RESOURCE USE

By E. L. Baum, Earl Heady, John Pesek and Clifford Hildreth.

This book is the outgrowth of seminar sessions sponsored by TVA in 1956. Part I—Physical and Economic Aspects of Water Solubility in Fertilizers. Part II—Examination of Liquid Fertilizers and Related Marketing Problem. Part III—Methodological Procedures in the Study of Agronomic and Economic Efficiency in Rate of Application, Nutrient Ratios and Farm Use of Fertilizers. Part IV—Farm Planning Procedures for Optimum Resource Use. Part V—Agricultural Policy Implications of Technological Change. It presents new methodological techniques for more efficient handling of research problems related to fertilizers and provides more meaningful \$1.00 answers to problems of practical application..... \$1.00

### HUNGER SIGNS IN CROPS—Second Edition

A symposium—published jointly by the American Society of Agronomy and the National Plant Food Institute.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 396 pages, 242 illustrations, including 124 in full color..... \$4.50

### APPROVED PRACTICES IN PASTURE MANAGEMENT (1956)

M. H. McVickar, Ph.D.

Outlines clearly and concisely how to have productive pastures to furnish high-quality forage for livestock, economically and efficiently. Written for grassland farmers. Covers the important activities associated with establishment, management and efficient use of pastures as grazing lands or as a source of fine winter feed for livestock. It is as specific as possible for all U.S. pasture areas. Twenty chapters, 256 pages, illustrated..... \$3.00

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### Joins Frontier Chemical

WICHITA, KANSAS—Burton A. Burquest has joined Frontier Chemical Co., Wichita, Kansas, to direct the firm's technical service and field research program for liquid grain fumigants, Melvin E. Clark, vice president—marketing, has announced. Mr. Burquest will be responsible for providing technical services required by distributors and consumers of liquid grain fumigants.

Mr. Clark said this appointment is part of Frontier's program toward additional technical service and assistance to its customers. Frontier also maintains a technical service department in the industrial chemicals area.

### Signal Oil Appointment

HOUSTON, TEXAS—Thomas M. Moran has been appointed assistant manager of chemical sales by the Houston Division of Signal Oil & Gas Co., it has been announced by E. A. von Doersten, sales manager, and E. M. Lundgren, manager of market research and product development. Mr. Moran will operate out of the firm's Houston offices.

The new appointee was formerly New York district manager for the company, but recently moved to Houston to take over his new duties. He has been with Signal Oil in the Eastern division for more than six years.

Succeeding Mr. Moran in New York is Joseph A. Savoca who was formerly a sales representative for Signal. He now assumes the position of New York district manager.

### Named Honorary Chairman

NEW YORK—The board of directors of International Paper Co. at their recent annual organization meeting designated John H. Hinman honorary chairman of the board and also appointed him director of Woodlands. He will continue to serve as a member of the board of directors.

Replacing Mr. Hinman as chairman of the board will be Richard C. Doane, who has served as president of the company since 1954 and as chief executive officer since 1959. Mr. Doane will continue to be chief executive officer. Lamar M. Fearing was elected to succeed Mr. Doane as president and Joseph P. Monge was elected vice president and treasurer.

### Named Supervisor

CHICAGO—Charles M. Gates was recently named Southern region technical sales supervisor for Morton Chemical Co., agricultural division. The announcement was made by Raymond P. Seven, assistant general manager of the agricultural division. Mr. Gates will cover 13 southern and south eastern states from headquarters in Atlanta, Ga. Before his new assignment Mr. Gates was a technical sales representative for Morton in six Midwest states and Canada.

Morton Chemical products under the technical supervision of Mr. Gates include a number of pesticidal products and fumigants.



Charles M. Gates

## To New PR Position

NEW YORK—Robert Fitzsimmons has been named public relations advisor for the chemicals division of Olin Mathieson Chemical Corp., it was announced by Gene M. Brown, public relations manager. He also will continue to be responsible for special public relations projects.

At the same time, it was announced that Kenneth M. Baker, former public relations advisor for the chemicals division, has been appointed public relations advisor for the company's new organics division. In addition, he will continue to serve as public relations advisor for the agricultural chemicals operation.

Mr. Fitzsimmons joined Olin in 1955. Prior to that he was a feature writer for the New York Journal of Commerce and, before that, associate editor of Tide Magazine.

Mr. Baker came to Olin in 1957 from Kaiser Industries, where he was New York public relations representative.

## N. Division Appointments

NEW YORK—Dr. G. Coli has been appointed director of development for Allied Chemical Corp.'s Nitrogen Division, it was announced by Frank O. Agel, vice president of research and development.

Dr. Coli has been chief engineer at the division's Hopewell, Va., plant since 1959. Before that he was assistant principal chemical engineer and director of operations engineering. He received his bachelor's and master's degrees in chemical engineering from Virginia Polytechnic Institute in 1941-42, served three years in the Naval Reserve as an associate chemist, and later taught at VPI from which he received his doctorate in 1949. The following year he joined Allied Chemical.

Nitrogen Division also announced five additional appointments at its development center at Hopewell, Va. They are:

Samuel W. Grossman from manager of estimating to chief engineer; Irving F. Anderson from manager of chemical engineering to director of construction and economic evaluation; William W. Hoehing from manager of operations engineering, to manager of chemical engineering; William J. Michels from supervisory engineer to manager of evaluation, and William H. Wright from supervisory engineer to manager of operations engineering.

## Heads Chemical Research

LOS ANGELES—Appointment of Dr. Howard Steinberg as director of chemical research for U.S. Borax

Research Corp., Anaheim, Cal., has been announced by Dr. C. L. Randolph, vice president of the wholly-owned subsidiary of U.S. Borax & Chemical Corp.

Dr. Steinberg joined U.S. Borax Research in 1954 as a research chemist. He served most recently as associate director of chemical research.

He received a B.S. degree in chemistry from the University of Illinois and his Ph.D. from UCLA. Dr. Steinberg has also done post doctoral work at Massachusetts Institute of Technology and UCLA.

## Ortho Appointment

RICHMOND, CAL.—The appointment of Robert W. Garrett as assistant to the president of California Chemical Co., Ortho Division, was announced recently by Howard J. Grady, president.

Mr. Garrett has been with Standard Oil Company of California for 24 years and for the last six has been chief analyst with the Ortho Division of Calchemical, responsible for economic analysis of projects proposed in the agricultural and garden chemical field.

## New General Manager

NEW YORK—Lloyd E. Lundahl, Jr., has been named general manager of Caribe Nitrogen Corp., San Juan, Puerto Rico. Caribe is managed by the Nitrogen Products Division of W. R. Grace & Co. under a management

contract. William J. Haude, president of the Nitrogen Products Division of Grace, made the announcement.

Mr. Lundahl joined the division in 1954 as assistant chief engineer at the Memphis plant. In 1956 he joined the Great Northern Oil Co. as chief engineer but returned to Grace-Memphis a year later as manager of the engineering and maintenance department. Since 1959 he has been plant manager for the Caribe Nitrogen Corp. He is a graduate of the University of Minnesota.

## Chase Names C. J. Dwyer

CHICAGO—Chase Bag Co. has announced the appointment of C. J. Dwyer as general traffic manager.

Formerly assistant to the general traffic manager, Mr. Dwyer will continue to maintain his offices at Chase traffic department headquarters, located in Chicago.

Chase Bag Co. manufactures and

markets a diversity of packaging products, including multiwall paper bags.

## Chipman Representative

PALO ALTO, CAL.—Chipman Chemical Co., Inc., has announced the addition of Robert D. Hack to its

staff as a sales representative for the San Joaquin Valley of California. Mr. Hack, of Dinuba, Cal., is a graduate of Oregon State College, Corvallis, with a B.S. in general sciences and a year-and-a-half of post graduate work in entomology.

He has had eleven years experience in agricultural sales with direct technical assistance to the growers.



Robert D. Hack

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## Richard V. Scott New Vice President of Bemis

ST. LOUIS, MO.—Richard V. Scott, vice president and assistant director of sales of the Bemis Bag Co., St. Louis, has been named director of sales for the company.

He succeeds H. V. Howes, who retired May 31 after 40 years with Bemis. Mr. Howes had been director of sales since 1942 and a Bemis vice president since 1946. Mr. Scott has been with Bemis since 1931, when he joined the company as a bookkeeper in the accounting department in Kansas City. He moved into sales work in 1934 in Omaha, where he later served as assistant sales manager.



Richard V. Scott

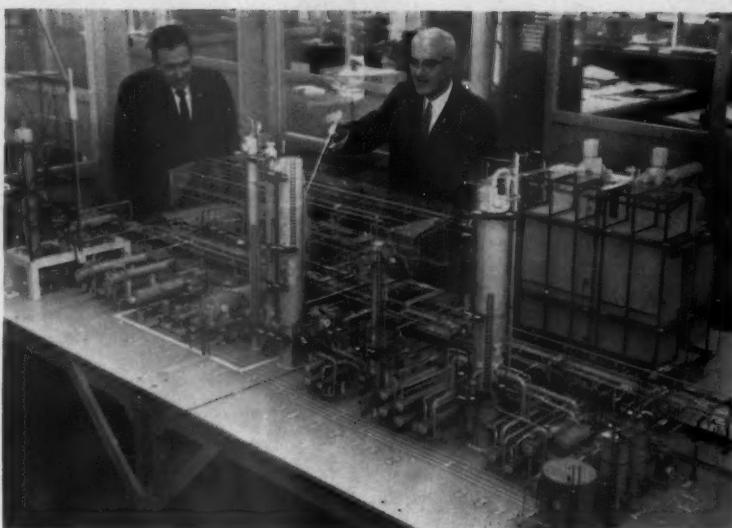
ager. He held a similar position with the Bemis sales division in Buffalo, N.Y., and in 1951 became manager of the Chicago general sales division.

In 1957 he was named director of eastern operations for the company. He came to the Bemis general offices in St. Louis in 1959 as assistant director of sales. He was elected a director of the company in 1959 and a vice president in February, 1960.

Mr. Scott is a native of Kansas City, Mo., and a graduate of the University of Missouri, with a B.S. degree in business administration. He later studied at the Harvard Business School.

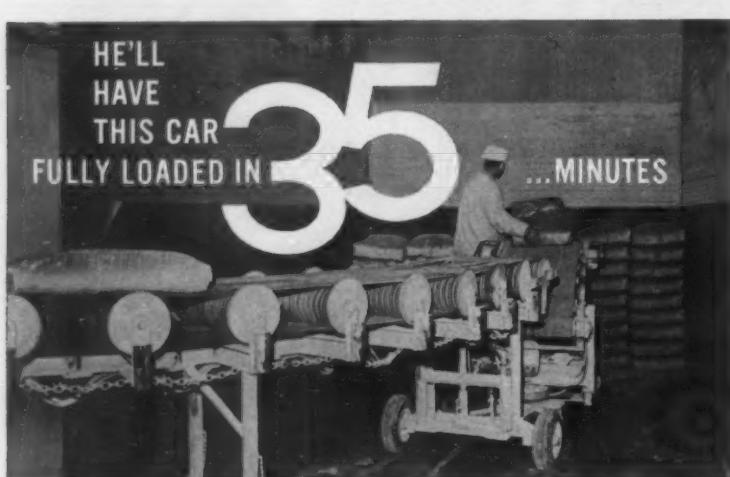
### SEED MAN DIES

LOS ANGELES — Walter R. Schoenfeld, Sr., chairman of the board of Germain's, Inc., seed growers, died May 28 of a heart attack. He was 65 and had been in the agricultural and horticultural fields for more than 40 years.



**SCALE MODEL**—A preview of the Ortho ammonia plant, one of four units in California Chemical Co.'s \$22 million plant food operation now under construction at Ft. Madison, Iowa. William M. Miller (right), plant manager, and Gayle H. Nichols, operating foreman, examine details of the model (1/32 actual size) constructed by the Bechtel Co., ammonia plant contractor.

The making of this miniature, accurate in every detail, kept three model makers and 10 draftsmen busy for eight weeks, but its efficiency as a guide to building is expected to cut the time of full-scale construction by at least a month. When completed the ammonia plant will produce 300 tons a day. Other plants in the Ft. Madison operation will include a nitric acid plant (250 tons per day), an ammonium nitrate plant (150 tons of prilled ammonium nitrate a day) and a complex fertilizer plant to produce 600 tons a day of "Ortho Unipel" pelleted plant foods in several formulations. Completion of the plants is scheduled for late fall, 1961.



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### Canadians Review Tariffs On Incoming Chemicals

OTTAWA—The first major review of tariffs on chemicals entering Canada since they were first established in 1906 is now in progress by Canada's tariff board. The chairman of the board recently said he was "disturbed" by the uniformity of rates proposed by a committee of the Canadian chemical industry. Because it was "an obvious impossibility" for the tariff board to consider separately tens of thousands of chemicals, the chemical industry committee suggested the board should adopt a uniform level of rates and where necessary provide exceptions.

The chemical industry proposed a tariff level of 15% on imports under the Commonwealth Preference and 20% on imports from "most-favored-nation" trading partners. The U.S. is

in this grouping. These are the levels that now apply under tariff law for all chemicals for which no specific tariffs are listed.

Louis Audette, board chairman, claimed there was lack of information to support a conclusion that rates of 15% and 20% were essential.

### Calchem Names Three

RICHMOND, CAL.—Appointments of three representatives have been announced by the Ortho Division of California Chemical Co. Anthony Nicas was named product salesman working out of Inwood, W.Va.; John A. Wilson and Wayne G. Lloyd will represent the company out of the Marion, Ohio branch office.

Mr. Nicas holds degrees from Delaware Valley College of Science and Agriculture and from Cornell University.

Mr. Wilson is a graduate of Ohio State University and served in the U.S. Army as a second lieutenant.

Mr. Lloyd was formerly a district sales manager for a seed company.

### FROST DAMAGES CROPS IN NEW ENGLAND

MANCHESTER, N.H.—Northern New England crops suffered heavy damage when devastating frosts hit the region over Memorial Day.

In New Hampshire, it was estimated that losses would reach more than \$500,000. Hardest hit crops were apples, tomatoes that were not covered, strawberry plants and other vegetables. Experts from the University of New Hampshire Extension Service began checking the damage in various parts of the state, where temperatures had plunged down to 28° at some points, the lowest ever recorded in the Granite State so late in the season.

In neighboring Vermont, where Burlington had an official record-smashing temperature of 28°, it was estimated that the apple crop in the southeast corner of the state was damaged nearly 50%.

C. Lyman Calahan, Vermont extension horticulturist, said Vermont strawberry growers in the Connecticut Valley area were "in good shape because they covered almost everything."

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- All moving parts located away from contact with corrosive acid-base fertilizer.
- Compressed air heats and agitates fertilizer to prevent sludging in cold weather.
- Standard model holds 1000 gallons; other sizes built to order.

## Agronomists From North Central Area To ASA Convention

MADISON, WIS.—Complete plans have been announced for the 1961 meeting of the North Central Branch of the American Society of Agronomy scheduled to be conducted at the University of Wisconsin July 4-7.

Speakers will include representatives of the Universities of Wisconsin, Illinois, Purdue, Chicago, Iowa State, and the American Potash Institute. Aside from the speaking portions of the programs, tours of the city will be conducted and a number of other social events are on the agenda.

The ASA group will be welcomed by D. C. Smith, chairman of the department of agronomy, University of Wisconsin, and L. E. Engelbert, chairman of the department of soils, as well as by C. A. Elvehjem, president of the University of Wisconsin.

The report of the ASA board will be presented by Werner L. Nelson, American Potash Institute, Lafayette, Ind.

A soils symposium will hear discussions on soil-plant relations, with participants including M. L. Jackson and G. C. Gerloff, University of Wisconsin; P. F. Low, Purdue University; and R. H. Bray, University of Illinois.

Weather and the plant will be the subject for another panel discussion on Thursday, July 6. Taking part in this general discussion will be V. E. Soumi and H. A. Senn, University of Wisconsin; R. H. Shaw, Iowa State University; J. E. Newman, Purdue; and C. E. Olmsted, University of Chicago.

Officers of the ASA are L. E. Engelbert, department of soils, University of Wisconsin, chairman; D. C. Smith, department of agronomy, University of Wisconsin, co-chairman; M. B. Russell, department of agronomy, University of Illinois, vice chairman; and M. T. Beatty, department of soils, University of Wisconsin, secretary-treasurer.



**NEW EQUIPMENT**—St. Regis Paper Co. has recently installed in its Kansas City, Mo., bag plant the latest model B-8700 Burroughs bottomer, which is said to make a wider range of pasted bag sizes and types than is possible with any other single piece of bag manufacturing equipment. St. Regis says the machine increases plant production capacity of regular pasted and stepped end bags and will thus speed service to customers. Pasted open mouth bale bags can also be manufactured on the wide-range equipment.

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## Future Supply of Food Dependent Upon Chemicals

BERKELEY, CAL.—Food for the future depends on the use of agricultural chemicals, Emil Mrak, chancellor of the University of California, Davis, declared recently in connection with his accepting the Babcock-Hart Award from the Institute of Food Technologists. He said that without chemicals to control pests, it is estimated that many crop yields would be reduced from 10 to 90%.

"The price of most food items sold in the stores would double and some would treble, while others, notably fruits and vegetables, would totally disappear from the open market," said Mr. Mrak.

"We have a real problem insofar as the use of chemicals for agriculture is concerned. Strong effort is being made to outlaw the use of these chemicals. It is necessary to counteract this strong force." With the pres-

ent rate of population increase, Mr. Mrak said, we must look to all possible ways to increase our future food supply.

## Fly Repellent Booklet Prepared by Union Carbide

NEW YORK—A new 35-page formulator's booklet has been issued by Crag Agricultural Chemicals, Union Carbide Chemicals Co., Union Carbide Corp., containing complete information on "Crag Fly Repellent," giving suggestions on effective and economical formulations. It also includes physical properties, solubilities of numerous toxicants and approximate costs of ingredients used for manufacturing various formulations.

In addition, new specimen labels for Crag Fly Repellent formulations for control of face flies, now found in 25 states, have been added to the handbook.

## Western Fertilizer Group Plans June Meeting

SALEM, ORE.—Plans are complete for the 12th annual regional fertilizer conference sponsored by the Pacific Northwest Plant Food Assn., meeting are the Merion Motor Hotel, Salem. Dr. H. B. Cheney, program chairman, reports that an attendance in excess of 225 members of the fertilizer industry is expected.

Theme for the meeting is "Effects of Fertilizer on Crop Quality and Composition."

The meeting includes the presentation of a number of papers by representatives of state colleges in the Northwest, the American Potash Institute, and the U.S. Department of Agriculture.

A tour of the North Willamette Branch Experiment Station is also on the agenda. Social events will include a cocktail hour and barbecue.

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## Roundup of Opinions . . .

### Credit Policies, Blenders, Demands for Services Discussed by Fertilizer Trade

FERTILIZER INDUSTRY leaders are an articulate group of men. Ask a number of them "how's business?" and you receive good forthright replies, sometimes so frank and straightforward that direct quotes can't be published.

Well, Croplife did ask for comments from a representative group of fertilizer industry people and we got them. (A roundup of some of these opinions is published on pages 1, 4 and 5 this issue.)

Some respondents were preoccupied with the immediate effects on fertilizer sales of the emergency feed grain program; others with the competitive aspects of the local blender; many were troubled about the soft price structure within the trade; while some mentions were made about the increasing amounts of service now being expected by the farmer in the way of soil testing, plant food application, and credit. All of these points were discussed thoroughly . . . and sometimes vehemently.

Despite the 3,889,256 acres signed up to be diverted in the government's current feed grain program, a number of respondents said that their 1961 tonnage was better than that of 1960, some as high as 10% to 15% greater. Another favorable observation was that higher analyses are being made throughout the trade. Thus, plant nutrient consumption can remain high even if gross tonnage may fall off some.

The presence of local blenders in the fertilizer picture was a source of irritation to quite a number of commentators. Several had uncomplimentary remarks to make about the influence of these operators in the trade, with one old line manufacturer stating: "Blending is a threat to our industry . . . they do an inferior job of mixing."

Still, in the opinion of others, including some state control officials from whom came much of the early opposition to blenders, the mechanically-mixed fertilizer product may become a permanent part of the trade. One control official opined that since demand for blended fertilizers has come from the farmers themselves, "I believe bulk blending is here to stay, despite the many forces seeking to discourage the practice."

Another state control official admitted that without a large field and laboratory staff, it would be difficult to exercise the quality of control work on blended materials at a level equal to that done on branded mixtures. This lends itself to the type of fears expressed by some regarding the lack of policing in the industry. The situation invites, these men say, the entrance into the fertilizer trade of speculators who might have more interest in a fast buck than in building a sound business based on quality products.

The matter of good business practices within the industry itself proved to be a topic of considerable note among the questionnaire respondents. One fertilizer man observed that "never before, since the 1930's, have so many operators cut so many prices so severely, nor extended such crazy and unsound credit terms." Nor was he alone in his comments on this subject. Some of his counterparts in other sections of the country reported similar reactions to the sales policies exercised by some of the trade.

Shrinking margins were decried, which, coupled with farmer demands for more services on the part of the fertilizer supplier, have made the

squeeze more acute this year than ever before. "A few years ago," one man wrote, "fully 50% of our fertilizers were hauled out on the trucks of customers who came to the plant and picked up the products. Today, at least 95% of our fertilizer, insecticide and herbicide materials are delivered to the farmers' places."

Credit extensions were also expressed as a sore spot in the trade. "Why should we play the part of bankers, too?" one industry man asked. His query went largely unanswered.

Perhaps the most accurate summary of the situation would be to say the industry is in the midst of change. Despite the irritations of present conditions, the long-term view of the industry is encouraging. Any nation increasing in population, demanding more and better food products and services, and depending on a fewer number of acres for all this bounty, will of necessity turn to the fertilizer and pesticide industries to furnish the means of increasing yields.

### Georgia Group Marks Decade of Achievement

TEN YEARS of activity of the Georgia Plant Food Educational Society were recently observed by that organization in fitting fashion during its annual meeting. Congratulations are due this group, and the fertilizer industry is quick to acknowledge the beneficial influence exerted by the Society in recent years.

In the absence of specific figures on how much tonnage the industry has sold through the subtle promotion of the Society, this much is certain: the fertilizer trade has been aided because of the efforts of this educational service.

One of the highlights during the decade of the Society is the Georgia Extension Service "Intensified Soil Fertility Program" which the Georgia group supported in every possible way. Readers will recall that this program, began several years ago in six pilot counties in South Georgia and since extended to numerous other counties in the state, has resulted in better farming efficiency and increased farm income amounting to millions throughout the state. The program achieved national recognition and has served as a pattern for similar programs now in progress in other states.

The ISF program in Georgia is being followed by special agricultural extension service programs promoting increased efficiency in the production of corn, cotton, pastures and other crops.

All of these endeavors encourage the use of fertilizers. Evidence of the program's success is found throughout Georgia in better farming efficiency, more farm income, and increased fertilizer use. The plant food trade enjoyed an increase of fertilizer use of 253,000 tons in Georgia . . . an increase far greater than that of any other state in the nation, and the only southeastern state, except Florida, to show any increase at all.

The Intensified Soil Fertility program is being expanded into the midwest and other parts of the country, but the Georgia experiment is regarded as the pattern for all of them. Its ten years of experience has made it much easier for similar programs to be initiated in other areas.

The Georgia Plant Food Educational Society has accomplished great things during its first decade of existence. Its operation and that of similar groups in other areas will continue to render a valuable service to the fertilizer industry.



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# MEETING MEMOS



June 11-14—National Plant Food Institute, annual meeting, The Greenbrier Hotel, White Sulphur Springs, W.Va.

June 18-21—Northeast Regional Branch, American Society of Agronomy, joint meeting with Eastern Section, Canadian Societies of Agronomy and Soil Science, University of Vermont, Burlington, Vt.

June 19-22—Western Societies of Soil Science and Crop Science with Pacific Division, American Association for the Advancement of Science, University of California, Davis, Cal.

June 27-29—Twelfth Annual Fertilizer Conference of the Pacific Northwest, Marion Hotel, Salem, Ore. Chairman: B. R. Bertramson, agronomist, Washington State University, Pullman.

June 20—Illinois Crop Improvement Assn. annual meeting and conference, Urbana-Lincoln Motor Inn, Urbana, Ill.

June 20-22—Pacific Branch, Entomological Society of America, Miramar Hotel, Santa Barbara, Cal.

June 27—American Society of Agricultural Engineers, 54th annual summer meeting, Iowa State University Armory, Ames, Iowa.

July 5-7—American Society of Agronomy, Midwest branch meeting, University of Wisconsin, Madison.

July 6-8—Workshop for analytical chemists in analyzing fertilizers,

Biochemistry Department, Purdue University, Lafayette, Ind.

July 8-10—Georgia Seedsmen's Assn., annual convention, Biltmore Hotel, Atlanta, Ga.

July 11-12—Empire State Soil Fertility Assn., annual meeting, Hamilton College, Clinton, N.Y.

July 16-17—Plant Food Institute of Virginia and North Carolina, annual meeting, Asheville, N.C.

July 18-19—Annual Summer Fertilizer Conference, sponsored by Auburn University and Alabama Soil Fertility Society, Auburn University campus, Auburn, Ala.

July 18-20—Western Plant Maintenance and Engineering Show, Los Angeles Pan Pacific Auditorium.

July 19-21—Southwest Fertilizer Conference and Grade Hearing, Galveston, Texas.

July 30-Aug. 2—Soil Conservation Service Society of America, annual meeting, Purdue University, Lafayette, Ind.

Aug. 10-11—Mississippi Soil Fertility and Plant Food Council, annual meeting, Biloxi, Miss.

Aug. 16-20—Canadian Fertilizer Assn., annual convention, Manoir Richelieu, Murray Bay, Quebec. R. P. Pennington, 2 Carlton St., Toronto 2, Ont., secretary-treasurer.

Aug. 27-30—Annual meeting of American Society for Horticultural Science, Purdue University, Lafayette, Ind.

Sept. 10-13—Farm Equipment Institute, 68th annual convention, Palmer House, Chicago.

Sept. 17-20—Canadian Agricultural Chemicals Assn., 9th annual meeting and conference, Mont Tremblant Lodge, Mont Tremblant, Quebec.

Oct. 4-6—Southeastern Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 9-11—Western Agricultural Chemicals Assn., annual meeting, Hotel Claremont, Berkeley, Cal.

Oct. 12-13—Northeastern Fertilizer Conference, Schine Inn, Chicopee, Mass.

Oct. 16-20—Fertilizer Section, National Safety Council, annual meeting, Pick-Congress Hotel, Chicago.

Oct. 29-Nov. 1—National Agricultural Chemicals Assn., 28th annual meeting, Homestead Hotel, Hot Springs, Va.

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**OCTOBER**      **NOVEMBER**      **DECEMBER**      **JANUARY**

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**FEBRUARY**      **MARCH**      **APRIL**      **MAY**

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18	19	20	21	22	23	24	15	16	17	18	19	20
25	26	27	28	29	30	31	22	23	24	25	26	27

Nov. 2-3—Pacific Northwest Plant Food Assn. annual convention, Hotel Gearhart, Gearhart, Oregon.

Nov. 7-10—Packaging Machinery Manufacturers' Institute Show of 1961, Cobo Hall, Detroit, Mich.

Nov. 12-14—California Fertilizer Assn., thirty-eighth annual convention; Jack Tar Hotel, San Francisco.

Nov. 27-30—Entomological Society of America, annual meeting, Miami, Fla.

Nov. 27-30—American Society of Agronomy annual meeting, with Soil Science and Crop Science Societies included, Sheraton-Jefferson Hotel, St. Louis, Mo.

Dec. 14-15—Ohio State Fertilizer and Lime Conference, Agricultural Administration Building, Ohio State University.

## 1962

Jan. 17-19, 1962—Southern Weed Conference, Hotel Patten, Chattanooga, Tenn.; Dr. R. E. Frans, Dept. of Agronomy, University of Arkansas, Fayetteville, secretary-treasurer.

Jan. 18-19—Southern Farm Forum, 15th annual meeting, Roosevelt Hotel, New Orleans, La.

Feb. 12-13—Short Course on Fertilizer Technology, sponsored by Soil Science Society of America, Purdue University.

Feb. 15-16—Joint Meeting of Midwestern Agronomists and Fertilizer Industry Representatives, annual meeting sponsored by National Plant Food Institute, Edgewater Beach Hotel, Chicago.

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## DIVIDEND DECLARED

NEW YORK—The board of directors of Witco Chemical Co., Inc., at a meeting held on May 16, voted a regular quarterly dividend of 20¢ a share, payable on July 14, 1961, to shareholders of record as of June 30, 1961.

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